WAVETEK

INSTRUCTION MANUAL

Model 145

145-S-620, 145-S-872 & 145-S-1021

20 MHz Pulse/Function Generator

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20 MHz Pulse/Function Generator

Model 145-S-620 is a standard Wavetek model 145 modified to provide a SYMMETRY control on the rear panel. This control allows the waveform time symmetry to be continuously adjusted over a 1:19 to 19:1 range. When this control is switched on, the generator operates at approximately 1/10 of the selected frequency. All procedures and descriptions in this manual assume that the SYMMETRY control is in the OFF position.

Model 145-S-872 is identical to the standard Model 145 except for the addition of an elapsed time meter installed on the rear panel.

Model 145-S-1021 is identical to the standard Model 145 except for the addition of both the SYMMETRY control and the elapsed time meter on the rear panel.

Option parts lists, assembly drawings and schematics as well as those for the standard Model 145 are contained in Section 7 of this manual.

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Manual Part Number 1300-00-0101

WARRANTY

Wavetek warrants that all products manufactured by Wavetek conform to published Wavetek specifications and are free from defects in materials and workmanship for a period of one (1) year from the date of delivery when used under normal conditions and within the service conditions for which they were furnished.

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The Warranty described above is Buyer's sole and exclusive remedy and no other warranty, whether written or oral, is expressed or implied. Wavetek specifically disclaims the implied warranties of merchantability and fitness for a particular purpose. No statement, representation, agreement, or understanding, oral or written, made by an agent, distributor, representative, or employee of Wavetek, which is not contained in the foregoing Warranty will be binding upon Wavetek, unless made in writing and executed by an authorized Wavetek employee. **Under no circumstances shall Wavetek be liable for any direct, indirect, special, incidental, or consequential damages, expenses, losses or delays (including loss of profits) based on contract, tort, or any other legal theory.**

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SECTION 7 PARTS LIST AND SCHEMATICS

ILLUSTRATIONS

NOTE

The following illustrations appear at the rear of this manual in the order shown.

Drawing Number	Title
0102-00-0101	Instrument Assembly and Parts List
0004-00-0101	Instrument Schematic
0102-00-0575	Chassis Assembly
1101-00-0575	Chassis Assembly Parts List

ILLUSTRATIONS (Continued)

SAFETY FIRST

PROTECT YOURSELF. Follow these precautions:

- Don't touch the outputs of the instrument or any exposed test wiring carrying the output signals. This instrument can generate hazardous voltages and currents.
- Don't bypass the power cord's ground lead with two-wire extension cords or plug adaptors.
- Don't disconnect the green and yellow safety-earth-ground wire that connects the ground lug of the power receptacle to the chassis ground terminal (marked with ⏚ or ⚠).
- Don't hold you eyes extremely close to an rf output for a long time. The normally nonhazardous low-power rf energy generated by the instrument could possible cause eye injury.
- Don't plug in the power cord until directed to by the installation instructions.
- Don't repair the instrument unless you are a qualified electronics technician and know how to work with hazardous voltages.
- Pay attention to the **WARNING** statements. They point out situations that can cause injury or death.
- Pay attention to the CAUTION statements. They point out situations that can cause equipment damage.

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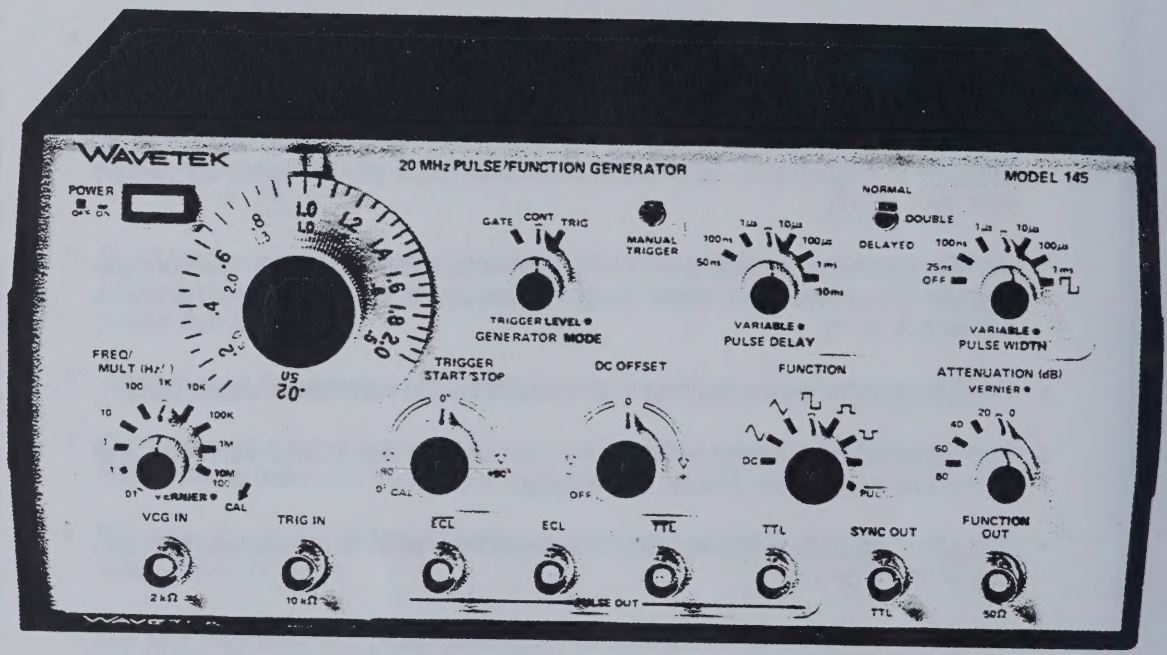


Model 145, 20 MHz Function/Pulse Generator

SECTION 1
GENERAL DESCRIPTION

1.1 THE MODEL 145

The Model 145 20 MHz Pulse/Function Generator has the versatility of output found in a function generator, plus the pulse characteristics of a pulse generator. It is a precision source of sine, triangle, balanced square, positive square and negative square waveforms, a source of dc levels and a source of normal and inverted pulses. All are front panel and remote control variable from 0.0001 Hz to 20 MHz (periods from 50 ns to 10,000s). Pulse widths are variable from 25 ns to 1 ms and pulse delays variable from 50 ns to 10 ms. Double pulses (two pulses per period) are also available with variable time between pulses. The logical complement of the pulse is selectable and either pulse or complement are output simultaneously as ECL, $\overline{\text{ECL}}$, TTL, $\overline{\text{TTL}}$ and variable amplitude and offset pulses.

The amplitude controllable output of either waveform or pulse can be varied to 30 volts peak-to-peak (open circuit) and attenuated up to 80 dB. DC voltage or dc offset of signal is variable by front panel control and by external control between ±15 volts (open circuit). The outputs are also triggerable for one or multiple cycles by front panel switch or remote signal. A voltage representing generator frequency and a TTL level sync pulse at the frequency of the generator are auxiliary outputs.

1.2 SPECIFICATIONS

1.2.1 Versatility

Instrument operates as either a function generator or pulse generator.

1.2.2 Function Generator

Waveforms
Selectable sine ∿ , square ⊓ , triangle △, positive square ⎍ , negative square ⎎ and dc. TTL sync pulse and fixed amplitude pulses of TTL, $\overline{\text{TTL}}$, ECL and $\overline{\text{ECL}}$, all simulaneously available with function output.

Operational Modes
Continuous: Generator oscillates continuously at selected frequency.

Triggered: Generator is quiescent until triggered by an external signal or manual triger, then generates one cycle at selected frequency.

Gated: As triggered mode, except generator oscillates for the duration of the gate signal.

Frequency Range
0.0001 Hz to 20 MHz in 10 overlapping ranges with approximately 1% vernier control.

Function Output
∿ , ⊓ , △ selectable and variable to 30 Vp-p (15 Vp-p into 50Ω). ⎍ , ⎎, to 15 Vp (7.5 Vp into 50Ω). All waveforms and dc can supply 150 mA peak current and may be attenuated to 60 dB in 20 dB steps with an additional 20 dB vernier.

DC Output and DC Offset
Selectable thru FUNCTION OUT output. Controlled by front panel control or by applying an external voltage. Adjustable between a minumum of ±14.4 Vdc (±7.2 Vdc into 50Ω) with signal peak plus offset limited to ±14.4 Vdc (±7.2 Vdc into 50Ω). External offset sensitivity approximately −1 V/V with output into open circuit. DC offset and output waveform attenuated proportionately the 60 dB output attenuator.

Sync Output
A TTL level pulse. Will drive 50Ω termination.

GCV—Generator Controlled Voltage
At GCV OUT connector, a 0 to +2V signal proportional to generator frequency. 600Ω source impedance.

VCG—Voltage Controlled Generator
Up to 1000:1 frequency change with external 0 to 2 volt signal to VCG IN connector. Upper and lower frequencies limited to maximum and minimum of selected range.

Slew Rate: 2% of range per μs.

Linearity:
±0.2% for 10 Hz to 200 kHz.
±0.75% for 0.001 Hz to 2 MHz.

Impedance: 2 kΩ.

Trigger and Gate
Input Range: 1 Vp-p to ±10V.

Impedance: 10 kΩ, 33 pF.
Pulse Width: 25 ns minimum.
Repetition Rate: 10 MHz maximum.
Adjustable Triggered Signal Start/Stop Point (sine and triangle only): Approximately -90° to $+90^{\circ}$ to 2 MHz.

1.2.3 Frequency Precision

Dial Accuracy
±3% of full range from X .01 Hz to X 1 MHz.
±5% of full range on X 10 MHz.

Time Symmetry
Square wave variation less than:
±1% from 0.001 Hz to 200 kHz
±0.5% from 20 Hz to 20 kHz

1.2.4 Amplitude Precision

Amplitude Change With Frequency
Sine variation less than:
±0.1 dB for 0.001 Hz to 200 kHz
±0.5 dB for 200 kHz to 2 MHz
±3.0 dB for 2 to 20 MHz

Step Attenuator Accuracy
0.3 dB per 20 dB step at 2 kHz.

1.2.5 Waveform Characteristics

Sine Distortion
<0.5% on X 100 Hz to X 10 kHz.
<1.0% on X .01 to X 10 Hz and X 100 kHz.
All harmonics 34 dB below fundamental on X 1 MHz.
All harmonics 26 dB below fundamental on X 10 MHz.

Square Wave Rise/Fall Times
At FUNCTION OUT <20 ns for 15V p-p output into 50Ω load.

1.2.6 Pulse Generator

Pulse Outputs
Variable amplitude pulse, and simultaneous fixed ECL, $\overline{\text{ECL}}$, TTL and $\overline{\text{TTL}}$ pulses and TTL sync pulse. All outputs can drive 50Ω terminations.

Operational Modes
Continuous, triggered and gated plus the following.
Normal Pulse: Adjustable width pulse in phase with sync signal.
Delayed Pulse: Pulse delayed with respect to normal pulse. Pulse delay and pulse width adjustable.
Double Pulse: Two pulses for every period. Time between pulses and pulse width adjustable. Minimum period 100 ns.

Pulse Period Range
50 ns to 10,000s in 10 overlapping ranges with approximately 1% vernier control.

Pulse Width
25 ns to 1 ms in 5 overlapping ranges with vernier control. Includes OFF and square wave.

Pulse Delay
50 ns to 10 ms in 6 overlapping ranges with vernier control.

Duty Cycle
Duty cycles to 70% for periods > 100 ns (< 10 MHz); for periods < 100 ns (> 10 MHz) duty cycles are approximately 50%.

Function Output
Variable to 30V p-p (15V p-p into 50Ω). DC offset and attenuation are same as for function generator.

Pulse Rise/Fall Times
At FUNCTION OUT, < 20 ns for 15V p-p output into 50Ω load.

1.2.7 General

Stability
Short Term: ±0.05% for 10 minutes.
Long Term: ±0.25% for 24 hours.
Percentages apply to amplitude, frequency and dc offset.

Environmental
Specifications apply at 23°C ± 5°C. Instrument will operate from 0°C to 50°C ambient temperatures.

Dimensions
28.6 cm (11 ¼ in.) wide; 13.3 cm (5 ¼ in.) high; 27.3 cm (10 ¾ in.) deep.

Weight
5 kg (11 lb) net; 6.6 kg (14½ lb) shipping.

Power
90 to 105V, 108 to 126V, 198 to 231V and 216 to 252V selectable; 48 to 400 Hz; less than 30 watts.

NOTE

All specifications apply from 0.1 to 2.0 on frequency dial when FUNCTION OUT output is at maximum and 50Ω terminated. Function generator specifications apply when PULSE WIDTH control is OFF.

1.3 EQUIPMENT REQUIRED

Equipment required is given in table 1-1.

Table 1-1. Equipment Required But Not Supplied

Equipment	Manufacturer's Part Number	Alternate Part Number	Application Acceptance	Application Calibration
Oscilloscope	TEK 465	TEK 475	X	X
Voltmeter	Fluke 8000A	Fluke 8010A		X
Distortion Analyzer	HP334A			X
Counter	HP5300B	HP5345A		X
Function Generator	Wavetek 180	Wavetek 148	X	X
DC Voltage Source	JF 332		X	X
50Ω Termination	TEK 011-0099-00	Fluke Y9103		X
3 Foot Coax Cables	TEK 012-0057-01	Pomona 4964-SS-36	X	X
Coax Tee Connector	TEK 103-0030-00	Pomona 3285	X	

SECTION 2
INSTALLATION

2.1 MECHANICAL INSTALLATION

After unpacking the instrument, visually inspect all external parts for possible damage to connectors, surface areas, etc. If damage is discovered, file a claim with the carrier who transported the unit. The shipping container and packing material should be saved in case reshipment is required.

2.2 ELECTRICAL INSTALLATION

2.2.1 Power Connection

WARNING

To preclude injury or death due to shock, the third wire earth ground must be continuous to the facility power outlet. Before connecting to the facility power outlet, examine extension cords, autotransformers, etc., between the instrument and the facility power outlet for a continuous earth ground path. The earth ground path can be identified at the plug on the instrument power cord; of the three terminals, the earth ground terminal is the nonmatching shape, usually cylindrical.

CAUTION

To prevent damage to the instrument, check for proper match of line and instrument voltage and proper fuse type and rating.

NOTE

Unless otherwise specified at the time of purchase, this instrument was shipped from the factory with the power transformer connected for operation on a 108 to 132 Vac line supply and with a 0.5 amp slow blow fuse.

Conversion to other input voltages requires a change in rear panel fuse-holder voltage card position and slow blow fuse according to the following table and procedure.

Card Position	Input Vac	Fuse
100	90 to 105	0.5 amp
120	108 to 126	0.5 amp
220	198 to 231	0.25 amp
240	216 to 252	0.25 amp

1. Open fuse holder cover door and rotate fuse pull to left to remove the fuse.
2. Select operating voltage by orienting the printed circuit board to position the desired voltage on the top left side. Push the board firmly into its module slot.
3. Rotate the fuse-pull back into the normal position and insert the correct fuse into the fuse holder. Close the cover door.
4. Connect the ac line cord to the mating connector at the rear of the unit and the power source.

2.2.2 Signal Connections

Use 3 foot RG58U 50Ω shielded cables equipped with female BNC connectors to distribute all input and output signals.

2.3 ELECTRICAL ACCEPTANCE CHECK

This checkout procedure is a general verification of generator operation: Should a malfunction be found, refer to the warranty in the front of this manual.

Refer to table 1-1 for equipment required for this procedure.

Preset the generator front panel controls as follows:

Set up the oscilloscope, Model 145 and external generator as shown in figure 2-1.

Control	Position
Dial	1.0
GENERATOR MODE	CONT
TRIGGER LEVEL	9 o'clock
PULSE DELAY	1 μs ▮ 10 μs
PULSE DELAY VARIABLE	12 o'clock
NORMAL/DOUBLE/DELAYED	NORMAL
PULSE WIDTH	OFF
PULSE WIDTH VARIABLE	12 o'clock
ATTENUATION	0
ATTENUATION VERNIER	Full cw
FUNCTION	⎍
DC OFFSET	OFF
TRIGGER START/STOP	0° CAL
FREQ/PERIOD MULT	1K
VERNIER	Full cw

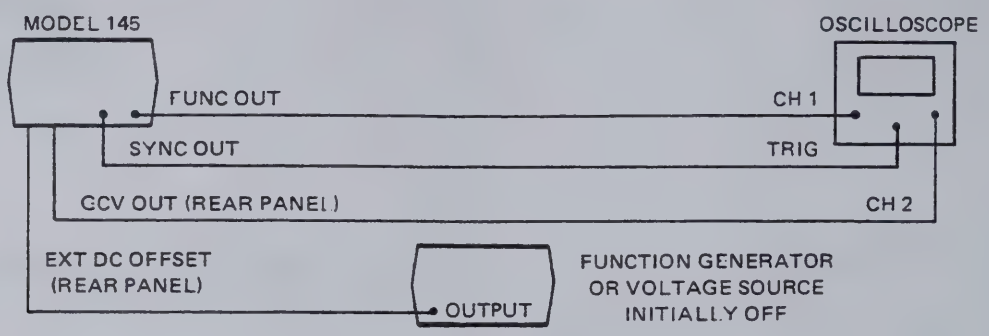


Figure 2-1. Initial Setup

Table 2-1. Acceptance Procedure

Step	Control	Position/Operation	Observe
1	POWER	ON	1 kHz square wave.
2	Dial	Rotate dial. Return to 1.0.	Rotation ccw increases frequency of square on one channel and dc level on other channel; cw decreases frequency and dc level.
3	FREQ/PERIOD MULT	Rotate switch. Return to 1K.	Rotation cw increases frequency; ccw decreases frequency (dc level not affected).
4	VERNIER	Rotate ccw. Return to CAL.	Rotation ccw gives a small decrease in frequency.
5	ATTENUATION	Rotate ccw. Return to 0.	Rotation ccw reduces square wave amplitude.
6	ATTENUATION VERNIER	Rotate ccw.	Square wave amplitude decreases.
7	DC OFFSET	Rotate cw. Return to OFF.	Square wave is immediately offset below previous level; then waveform moves up to a positive level. OFF returns waveform to original position. (Clipping occurs at ±15V.)
8	Function Generator or Voltage Source	Vary input voltage.	Waveform dc level varies.
	Remove EXT DC OFFSET IN cable and connect to VCG IN connector. Remove GCV OUT cable.		
9	Function Generator or Voltage Source	Vary input voltage; then disconnect input.	Frequency increases with increased voltage, decreases with decreased voltage.
10	ATTENUATION VERNIER	Rotate cw.	Square wave amplitude increases.
11	FUNCTION	Rotate to DC, ∿ , ∿ , ⊓ , ⊓ , ⊔ , then ∿ .	Note dc level on scope. ∿ , ∿ and ⊓ should be centered on dc level. ⊓ should rest on dc level, ⊔ should rise to dc level.
12	GENERATOR MODE	GATE	A dc level.
13	MANUAL TRIG	Press down.	A series of sine waves.

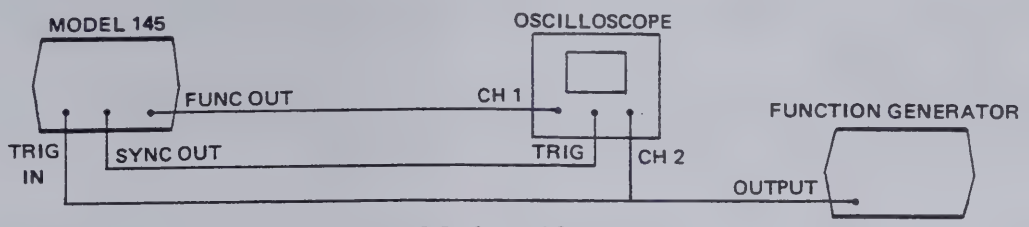


Figure 2-2. Second Setup

Table 2-1. Acceptance Procedure (Continued)

Step	Control	Position/Operation	Observe
	Set up a trigger source as shown in figure 2-2. Trigger on triangle waveform. Set trigger source at 100 Hz ∿ .		
14	TRIGGER LEVEL	Rotate knob. Set for several cycles.	Knob varies number of cycles gated.
15	GENERATOR MODE	TRIG	One cycle per trigger cycle.
16	TRIGGER START/STOP	Rotate knob, then to 0° CAL.	CW starts sine wave at +90°; ccw starts sine wave at –90°. Fully cw gives continuous sine waves.
	NOTE: Select square wave on trigger source.		
17	FUNCTION	PULSE	DC level (minus).
18	PULSE WIDTH	Turn cw to 100 μs ▮ 1 ms.	Pulse appears.
19	PULSE WIDTH VARIABLE	Rotate, then to 12 o'clock	CW increases pulse width; ccw decreases pulse width.
20	FUNCTION	PULSE, then $\overline{\text{PULSE}}$.	Pulse direction reverses; dc levels remain the same values.
21	NORMAL/DOUBLE/ DELAYED Switch	DELAYED	No change.
22	PULSE DELAYED	100 μs ▮ 1 ms	Small horizontal shift.
23	PULSE DELAYED VARIABLE	Turn knob.	Pulse moves horizontally.
24	NORMAL/DOUBLE/ DELAYED Switch	DOUBLE	No change.
25	PULSE DELAYED VARIABLE	Turn knob to resolve two pulses.	Double pulse appears.

2.4 PREPARATION FOR SHIPMENT

If original packing material was saved, pack instrument in same manner as received. When using packing materials other than original, use the following guidelines:

1. Wrap instrument in plastic packing material.
2. Use double-wall cardboard shipping container.
3. Protect all sides with shock-absorbing material such as styrofoam dunnage to prevent instrument movement within the container.
4. Seal shipping container with approved sealing tape.
5. Mark FRAGILE on all sides, top and bottom of shipping container.

2.5 PREPARATION FOR STORAGE

This instrument should be stored in a clean, dry environment. The following limitations apply to both storage and reshipment.

1. Temperature within −55°C to +75°C range.
2. Relativity humidity not to exceed 95% at +25°C and sea level (non-condensing).
3. Altitude from sea level to 40,000 feet.

2.6 PREPARATION FOR EXTENDED STORAGE

For extended storage greater than 6 months, pack instrument as indicated for shipment.

SECTION 3
OPERATION

3.1 CONTROLS AND CONNECTIONS

The generator front panel controls and connectors are shown in figure 3-1 and keyed to the following descriptions.

(1) POWER Switch

Turns generator on and off.

(2) Frequency Dial

Settings under the dial index mark multiplied by (17) determine the output signal frequency. The dial calibration marks correspond to the frequency (black) numbers only. The period (grey) numbers are approximations only. Refer to table 3-1 for quick period/frequency conversion. The frequency can be varied by the vernier (17) and the VCG signal (16)

(3) GENERATOR MODE Switch

Selects one of the following three modes.

CONT – Continuous output at FUNCTION OUT, SYNC OUT and, if PULSE WIDTH is on, PULSE OUT connectors.

TRIG – DC level output at all six output connectors until the generator is triggered by MANUAL TRIGGER switch or with a signal at the TRIG IN connector. When triggered, the generator output is one cycle of waveform or one pulse period followed by a dc level.

GATE – As for TRIG except the output is continuous for the duration of the trigger signal at TRIG IN. The last cycle or period started is completed.

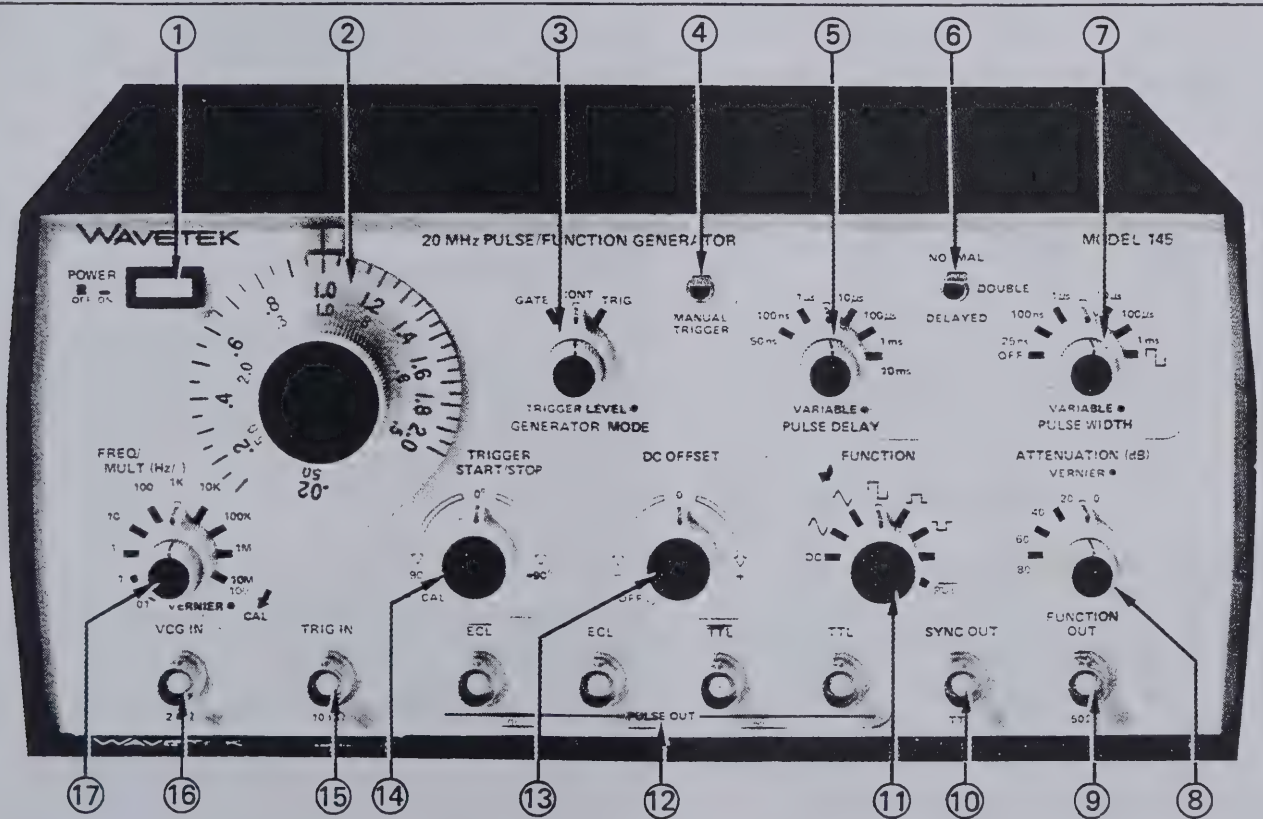


Figure 3-1. Controls and Connectors

Table 3-1. Period to Frequency Conversion

Converted Frequency Dial Values
(Based on f = 1/T where ⌐⌐)
⊢T⊣

Time	Freq	Time	Freq	Time	Freq
.5	2	2.3	.44	4.1	.24
.6	1.67	2.4	.42	4.2	.24
.7	1.43	2.5	.4	4.3	.23
.8	1.25	2.6	.39	4.4	.23
.9	1.11	2.7	.37	4.5	.22
1	1	2.8	.36	4.6	.22
1.1	.91	2.9	.35	4.7	.21
1.2	.83	3	.33	4.8	.21
1.3	.77	3.1	.32	4.9	.2
1.4	.71	3.2	.31	5	.2
1.5	.67	3.3	.3		
1.6	.63	3.4	.29		
1.7	.59	3.5	.29		
1.8	.56	3.6	.28		
1.9	.53	3.7	.27		
2	.5	3.8	.26		
2.1	.48	3.9	.26		
2.2	.46	4	.25		

Symbols
M = 10^6
k = 10^3
m = 10^{-3}
μ = 10^{-6}
n = 10^{-9}

To use the dial calibration marks when setting period time, the period must be converted to frequency.

Example: Set generator for a 23 μs pulse period.

1. Find the number 23 (or .23, 2.3, etc.) in the Time column. Note its form and Freq equivalent.

Time	Freq
2.3	.44

2. Express 23 μs using the 2.3 form: 2.3 X 10^{-5}.

3. Set FREQ/PERIOD MULT switch to the equivalent of 10^{-5} : 10μ.

4. Set the dial to the frequency equivalent of 2.3: .44.

NOTE: Refer to paragraph 1.2 for dial accuracy.

TRIGGER LEVEL Control

Determines the level at which the input trigger signal at the TRIG IN connector (15) is accepted as a trigger or gate in the trigger and gate modes. The trigger level can be varied from fully cw, where a positive-going excursion thru approximately −10V is a trigger, to fully ccw, where a positive-going excursion thru approximately +10V level is a trigger.

(4) MANUAL TRIGGER Switch

Triggers or gates the output signal when GENERATOR MODE switch (3) is at TRIG or GATE. In trigger mode, one cycle is output when the switch is pressed. In gate mode, cycles are continuously output as long as the switch is held down.

NOTE
Set TRIGGER LEVEL (3) fully ccw.

(5) PULSE DELAY Control

When NORMAL/DOUBLE/DELAYED switch (6) is at DELAYED, PULSE DELAY selects one of six time ranges for delay of pulse with respect to the undelayed signal leading edge. When (6) is at DOUBLE, PULSE DELAY selects the time between double pulse leading edges.

VARIABLE Control

Inner knob selects delay time within the range selected by the outer knob.

(6) NORMAL/DOUBLE/DELAYED Switch

Selects the pulse parameters as follows:

NORMAL – Pulse of width and frequency set by front panel switches appears at TTL, $\overline{\text{TTL}}$, ECL,

$\overline{\text{ECL}}$ and FUNCTION OUT connectors with synchronous leading edges to the sync pulse ⑩ trailing edge.

DOUBLE—As NORMAL plus an additional pulse in each pulse period delayed from the first pulse leading edge by time ⑤

DELAYED—As NORMAL, except the pulse leading edge is delayed from the normal pulse leading edge by time ⑤ .

⑦ PULSE WIDTH Control

Outer knob selects the range for the width of all pulses except sync. Has OFF and square wave detents. When in-OFF position, the 145 has no PULSE OUT outputs. The square wave (⊓) detent is normally used to check the 50% period point; PULSE DELAY ⑤ has no effect. For the best square wave output, set FUNCTION ⑪ to ⊓ .

VARIABLE Control

Inner knob selects pulse width within the range selected by the outer knob.

⑧ ATTENUATION Control

Outer knob reduces output voltage level of all outputs at FUNCTION OUT with increasing steps of attenuation.

VERNIER Control

Inner knob is a 20 dB vernier which controls the output within the steps of the outer knob. DC and offset voltages are not affected by this control.

⑨ FUNCTION OUT Connector

The only output for the functions other than fixed amplitude pulse. At this output the functions and pulses are controllable in amplitude and dc offset; the other outputs furnish fixed amplitude pulses only.

⑩ SYNC OUT Connector

Furnishes a TTL pulse for each cycle or period of the generator. To be used for scope or similar synchronization. Refer to paragraph 3.2.1.4 for conversion to an ECL sync pulse.

⑪ FUNCTION Switch

Selects one of eight output signals; dc, waveforms or pulses.

⑫ PULSE OUT

Four standard pulses for logic circuits as follows (PULSE WIDTH ⑦ must be other than OFF):

TTL Connector—Furnishes a transistor-transistor-logic level pulse whose occurence and duration are controllable. Levels are typically <0.5V quiescent, $>$ 2.0V active into a 50Ω termination.

$\overline{\text{TTL}}$ Connector—Same as TTL connector except active and quiescent levels are reversed.

ECL Connector—Furnishes an emitter-coupled logic level pusle with controllable occurence and duration. Levels are typically -1.8V quiescent, -0.9V active into a 50Ω termination connector to -2 volts. Refer to paragraph 3.2.1.3 for ECL loading instructions.

$\overline{\text{ECL}}$ Connector—Furnishes an output like the ECL output, except active and quiescent levels are reversed.

⑬ DC OFFSET Control

Offsets the waveform or dc level at ⑨ from approximately -15V to $+15$V (open circuit; approximately ± 7.5V into 50Ω). An OFF position ensures no offset.

⑭ TRIGGER START/STOP Control

Sets the start and stop point of the selected waveform (sine or triangle only) appearing at ⑨ Usually used in the trigger mode and in combination with ⑬ to create desired waveforms. 0° CAL position ensures conventional waveforms symmetrical about 0 Vdc.

⑮ TRIG IN Connector

Accepts a 1 Vp-p to 10V external signal to trigger the generator. (Up to ± 50V will not damage circuitry.) Triggers on rising edge of input which crosses TRIGGER LEVEL ③ setting from negative to positive.

⑯ VCG IN Connector

Accepts 0 to $+2$V ac or dc voltages to vary up to 1000:1 the frequency and period of the outputs.

The upper and lower limits are defined by the maximum and minimum dial (2) settings multiplied by (17) . VCG input will not drive the generator beyond the normal dial limits of a range.

(17) **FREQ/PERIOD MULT Switch**

The outer knob selects one of ten frequency/period multipliers for the dial (2) setting. Frequency, then period, are noted at each setting.

VERNIER Control

A fine adjustment of the frequency dial (2) setting.

Not Shown **EXT DC OFFSET IN Connector (Rear Panel)**

Applied voltage offsets the selected waveform linearly. Offset is 1V for each −1V applied with output connected into an open circuit. Maximum input is ±7.5V. Offset is affected by the attenuator (8) .

Not Shown **GCV OUT Connector (Rear Panel)**

This connector gives a 0 to +2V signal proportional to the frequency of the generator within any given range. The signal can be used as the X drive for X-Y recorders.

3.2 OPERATION

Perform the initial checkout in Section 2 for the feel of the instrument. Any questions concerning individual controls and connectors may be answered in paragraph 3.1.

3.2.1 Signal Termination

3.2.1.1 FUNCTION OUT Signal

Proper signal termination, or loading, of the generator connectors is necessary for its specified operation. For example, the proper termination of the main output is shown in figure 3-2. Placing the 50Ω terminator, or 50Ω resistance, in parallel with a higher impedance matches the receiving instrument input impedance to the generator output impedance, thereby minimizing signal reflection or power loss on the line due to phase angle mismatch.

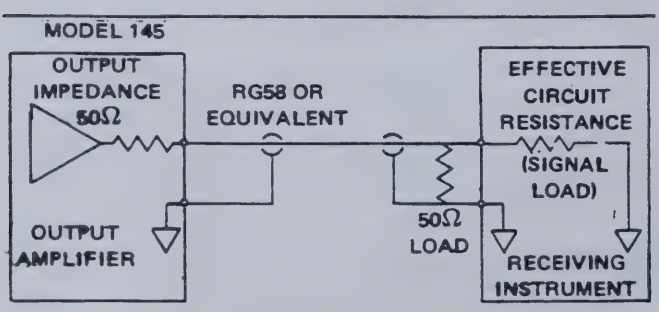


Figure 3-2. Signal Termination

3.2.1.2 TTL PULSE OUT Signals

The TTL and $\overline{\text{TTL}}$ PULSE OUT outputs can drive 50Ω and higher impedance terminations.

3.2.1.3 ECL PULSE OUT Signals

The ECL and $\overline{\text{ECL}}$ PULSE OUT outputs are driven by MC10124's. The signals must be properly terminated at the point that they enter an external ECL circuit. Several connection possibilities are shown in figure 3-3.

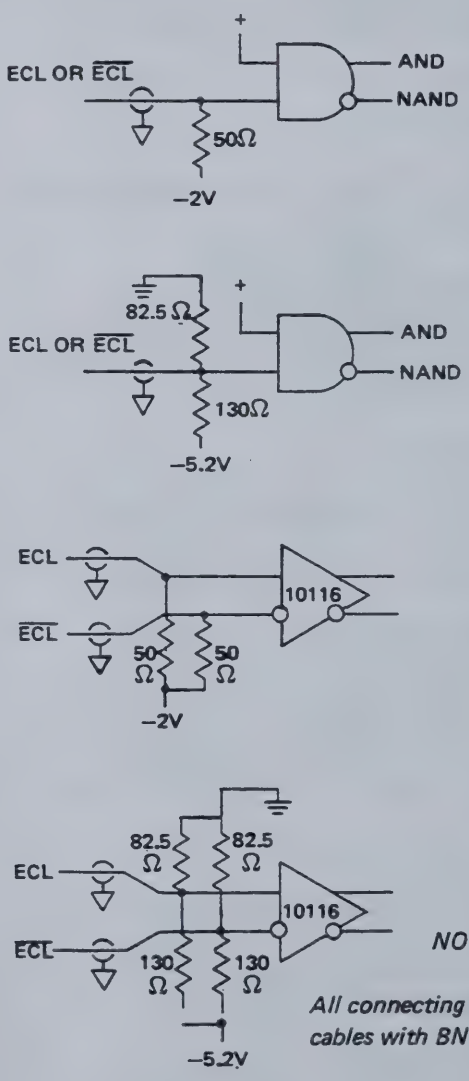


Figure 3-3. ECL Terminations

3.2.1.4 Conversion of SYNC OUT TTL to ECL

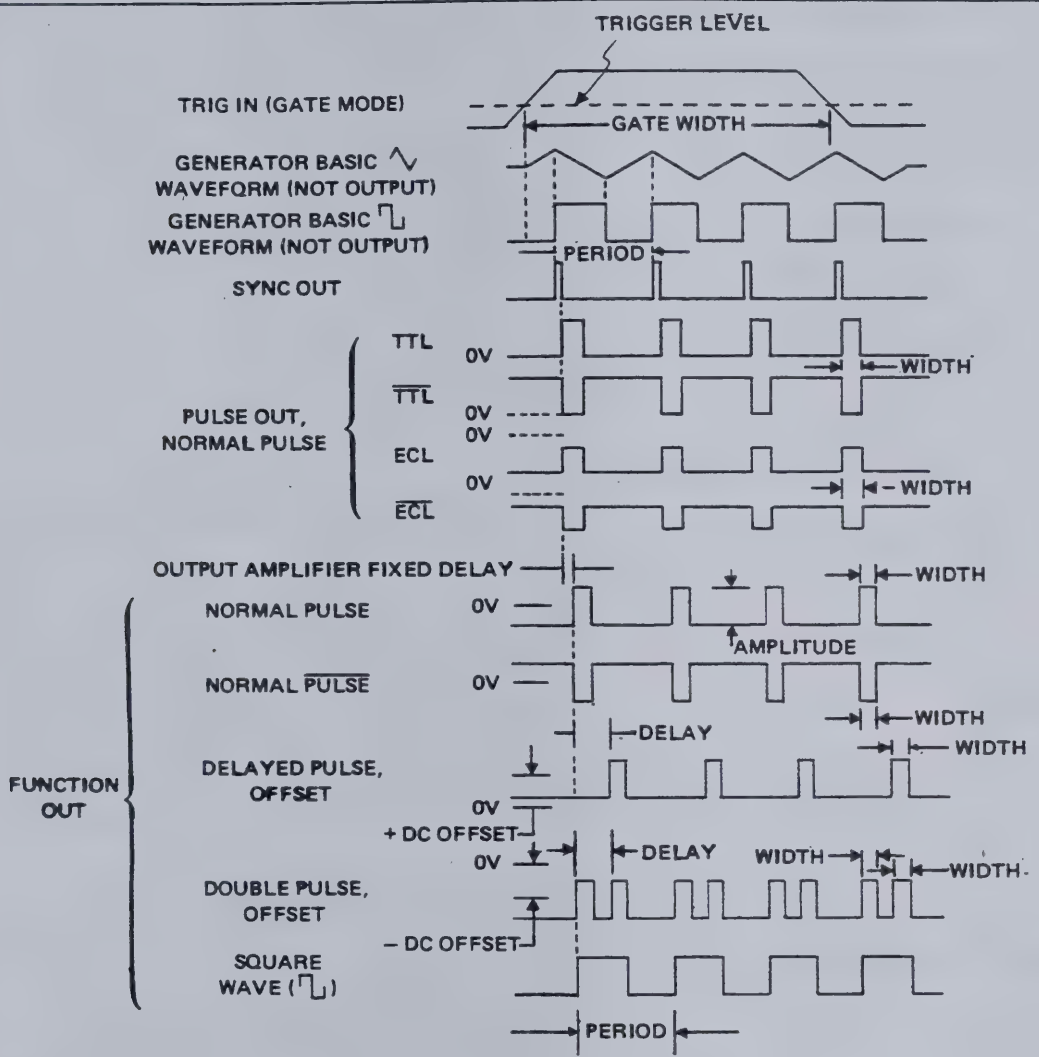
The SYNC OUT TTL pulse can be converted to an ECL pulse by rerouting two jumpers on the trigger/pulse printed circuit board. Disconnect jumper at E24 and connect to E25. Disconnect jumper at E27 and connect to E28. The two jumpers are correctly routed from E25 to E26 and from E28 to E29 for ECL operation. Instrument disassembly is covered in paragraph 5.3.

3.2.2 Pulses

See figure 3-4 for definition of controllable pulse characteristics.

3.2.3 Waveforms

See figure 3-5 for definition of controllable waveform characteristics.



NOTES

1. *Not Shown: TTL, $\overline{TTL}$, ECL, $\overline{ECL}$ double pulse, delayed pulse and $\overline{pulse}$.*

2. *Pulse period is determined by the generator frequency setting unless in trigger mode, in which case it is determined by trigger frequency.*

3. *In trigger mode, just one period is generated for each trigger pulse.*

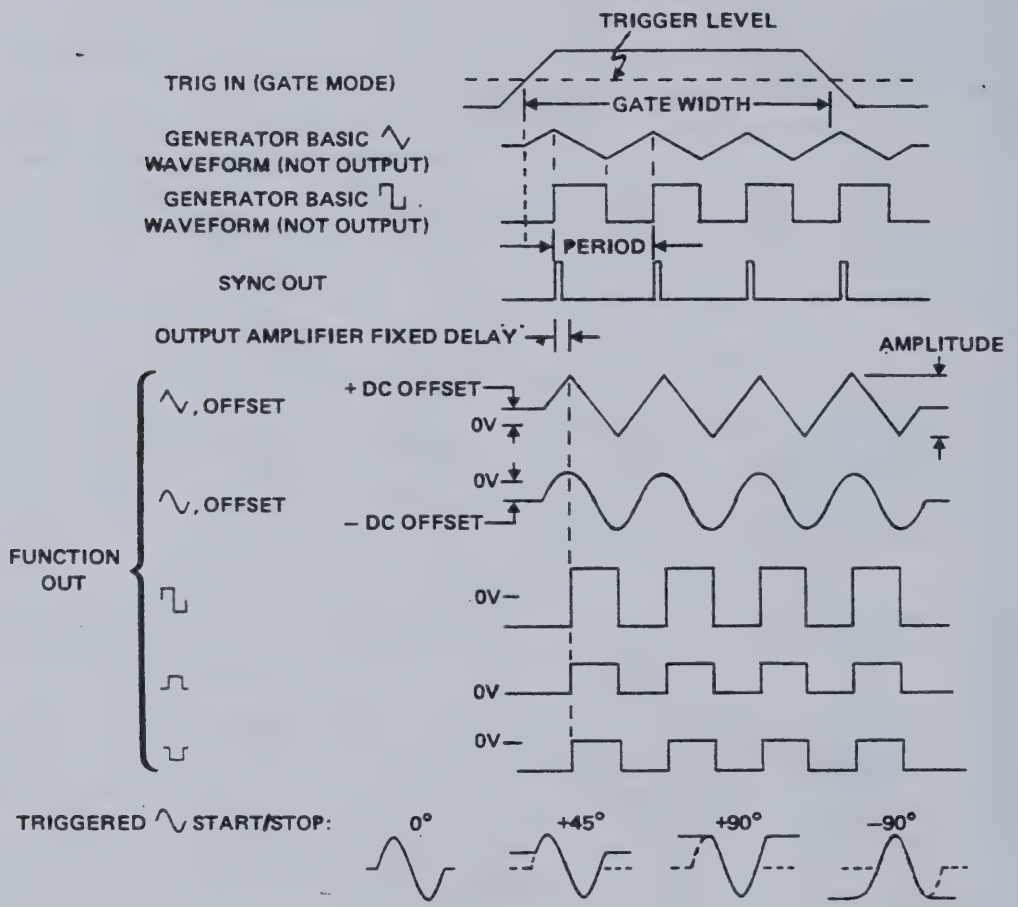
   DC offset plus pulse peak voltage > | 7.5V | causes pulse clipping.

Figure 3-4. Pulse Characteristics

3.2.4 Voltage Controlled Function Generator Operation

Operation as a voltage controlled function generator (VCG) is as for a manually controlled function generator, only the frequency within particular ranges is additionally controlled with dc levels (±2V excursions) injected at the VCG IN connector. Set the frequency dial to a reference from which the frequency is to be voltage controlled.

1. For frequency control with positive dc inputs at VCG IN, set the dial for a lower frequency limit.
2. For frequency control with negative dc inputs at VCG IN, set the dial for an upper frequency limit.
3. For modulation with an ac input at VCG IN, set dial at desired center frequency. Do not exceed the maximum dial range of the selected frequency range.



NOTES

1. *Period is controlled by the generator frequency setting.*
2. *In trigger mode, just one period is generated for each trigger pulse.*
3. *DC offset plus peak waveform voltage > | 7.5V | causes waveform clipping.*

Figure 3-5. Waveform Characteristics

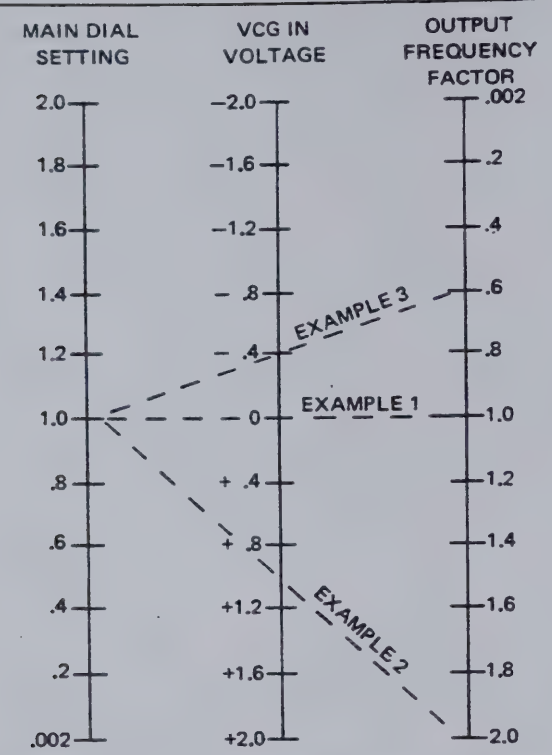


Figure 3-6. VCG Voltage-to-Frequency Nomograph

Figure 3-6 is a nomograph with examples of dial and voltage effects. Example 1 shows that with 0V VCG input, frequency is as determined by the main dial setting, 1.0 in this example. Example 2 shows that with a positive VCG input, output frequency is increased. Example 3 shows that with a negative VCG input, output frequency is decreased. (Note that the Output Frequency Factor column value must be multiplied by a frequency range multiplier to give the actual output frequency.)

NOTE

The frequency vernier must be rotated fully ccw for 1000:1 range.

Nonlinear operation results when the VCG input voltage is excessive; that is, when the attempted generator frequency exceeds the range setting (2 times the multiplier setting) or in the other direction, 1/1000th of the range setting.

The up to 1000:1 VCG sweep of the generator frequencies available in each range results from a 2V excursion at the VCG IN connector. With the frequency dial set to 2.0, excursions between −2V and 0V at VCG IN provide the up to 1000:1 frequency sweep. With the dial set to .002, excursions between 0V and +2V at VCG IN provide the up to 1000:1 sweep within the set frequency range.

3.2.5 Delay of Triggered Pulse

Additional pulse delay is available in triggered mode. Not only is the PULSE DELAY usable, but the ¼ cycle delay between trigger acceptance and sync pulse shown in figure 3-7 can also be variable delay.

Merely determine the delay desired and apply this formula for the frequency setting:

$$\text{Frequency in Hz} = \frac{1}{(4 \cdot \text{delay in seconds})}$$

Then, adjust the pulse width for your desired pulse. Practical range with the frequency dial and multiplier is 1 ms to 42 minutes. Delay control range is 50 ns to 10 ms.

Frequency vernier and start/stop control also affect the delay. So, for accurate frequency dial control of delay, set these at their cal positions.

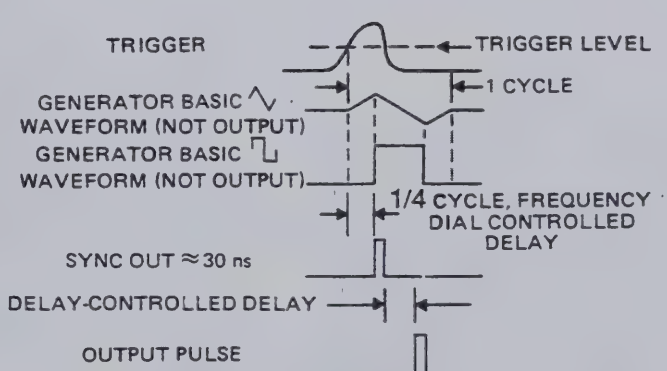


Figure 3-7. Pulse Delay From Trigger

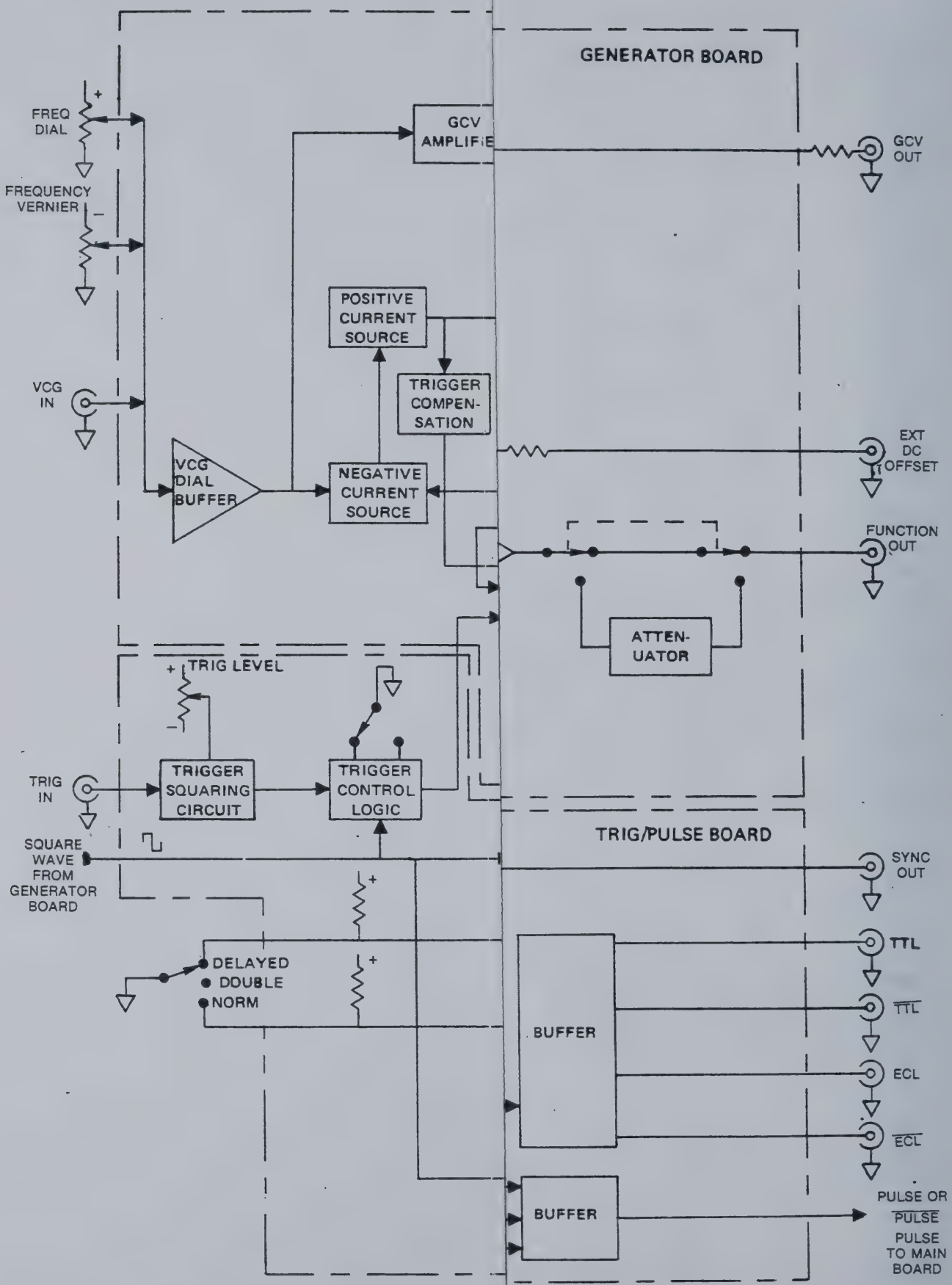


Figure 4-1. Overall Block Diagram

SECTION 4
CIRCUIT DESCRIPTION

4.1 BASIC WAVEFORM DEVELOPMENT

The heart of the generator (the bold path in figure 4-1) is a triangle and square wave generator. The triangle waves are developed by capacitor charging ramps that are alternately reversed in polarity. The polarity reversal is caused by a flip-flop circuit, or hysteresis switch, that in turn produces the square waves. The flip-flop changes states upon detecting amplitude limits of the charging ramps through the triangle amplifier.

As shown in figure 4-1, the VCG dial buffer sums the currents from the frequency dial, frequency vernier and VCG in connector. The VCG dial buffer is an inverting amplifier whose output voltage is used to control a positive current source and a negative current source. For symmetrical output waveforms, the currents from the two current sources are equal and directly proportional to the voltage of the VCG dial buffer output. The diode gate, which is controlled by the hysteresis switch, is used to switch the positive or the negative current to the integrating capacitor selected by the frequency multiplier. If the positive current is switched into the integrating capacitor, the voltage across the capacitor will rise linearly to generate the triangle rise transition. If the current is negative, the voltage across the integrating capacitor will fall linearly to produce the fall transition.

The triangle amplifier is a unity gain amplifier whose output is fed to the hysteresis switch. The hysteresis switch has two voltage limit points (+1.25 and −1.25V) at its input.

During the time the output voltage of the triangle amplifier is rising, the output voltage of the hysteresis switch is positive, but when the output voltage of the triangle reaches +1.25V, it triggers the hysteresis switch causing the output to switch negative. Once the control voltage into the diode gate becomes negative, it will switch the positive current out and switch the negative current in to the integrating capacitor, so that the voltage across the capacitor will reverse, starting a linear decrease of the waveform. When the decreasing voltage reaches −1.25V, the output of the hysteresis switch will switch back to positive, reversing the process. This action generates the triangle waveform as shown in figure 4-2. Since the output of the hysteresis switch is a square wave, the result is simultaneous generation of a square wave and a triangle wave at the same frequency.

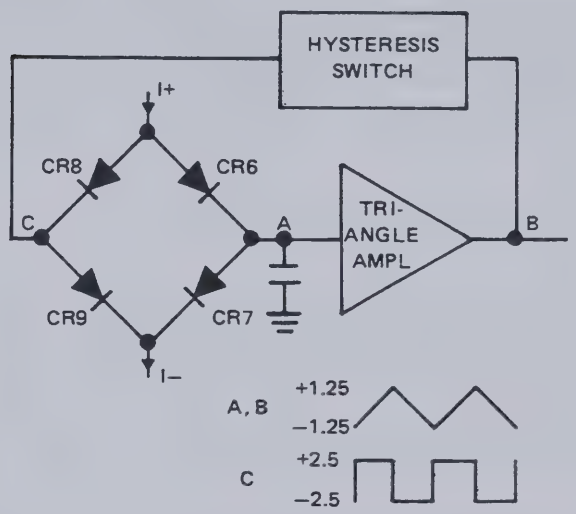


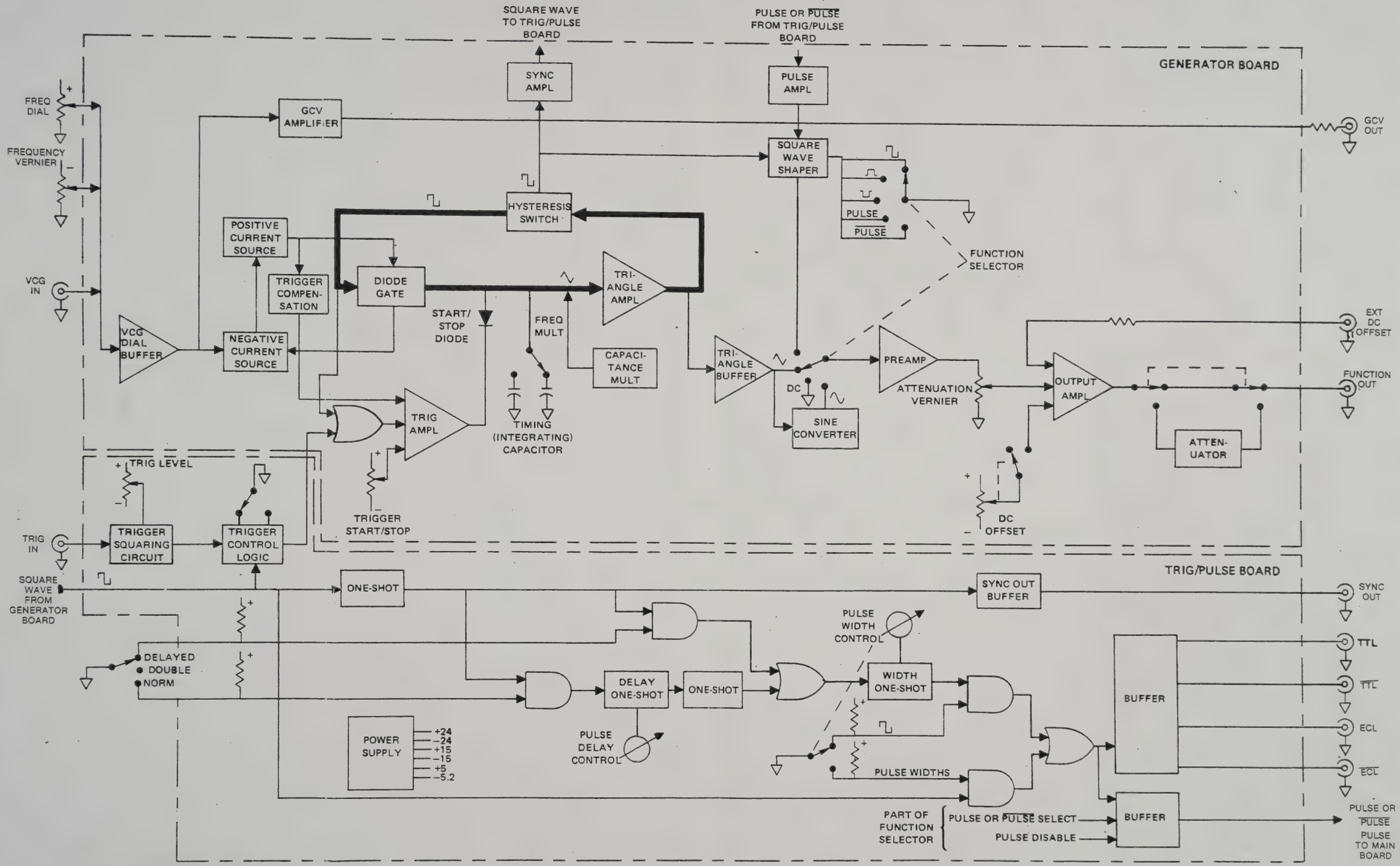
Figure 4-2. Basic Generator and Timing Diagram

The output frequency is determined by the magnitude of the capacitor selected by the frequency multiplier and the magnitude of the positive and negative current sources. Since the current sources are linearily proportional to the control voltage of the VCG circuit, the output frequency will also be linearily proportional to the control voltage.

The output of the hysteresis switch is fed to the sync amplifier and also the the square wave shaper. The square wave shaper consists of a shaping circuit which limits the square wave output swing to ±1.25V. For positive pulse outputs, it limits the output voltage swing from -1.25 to 0V; and for negative pulse outputs, it limits the output voltage swing from 0 to +1.25V. The PULSE or $\overline{\text{PULSE}}$ from the auxiliary board are bipolar and processed as the square wave.

The triangle wave from the triangle amplifier is coupled through a buffer amplifier and made available to the function selector switch. The buffer amplifier provides a low impedance to drive the sine converter circuit. The sine converter, using the nonlinear characteristics of its diodes, converts the triangle wave into a sine wave.

The square wave from the sync amplifier, processed through a one-shot and the sync out buffer, is externally available at the sync out connector. The sync pulse, then, is a TTL level pulse output of the generator frequency.



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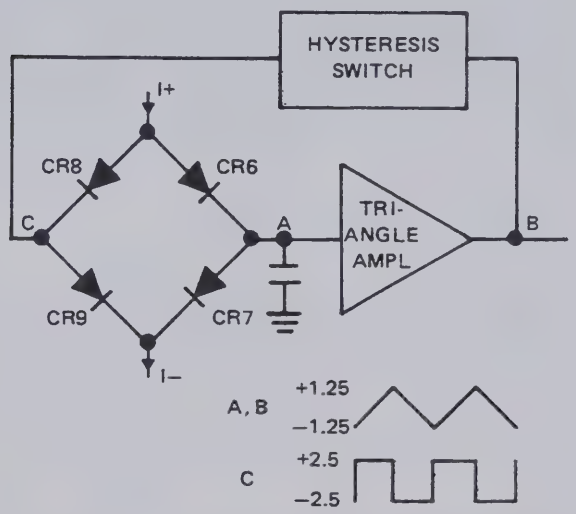

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The square wave from the sync amplifier, processed through a one-shot and the sync out buffer, is externally available at the sync out connector. The sync pulse, then, is a TTL level pulse output of the generator frequency.

4.2 AMPLITUDE OFFSET AND ATTENUATION

The selected waveform is inverted and amplified in the preamplifier. The preamplified waveform is sent to the output amplifier.

The output amplifier is an inverting amplifier with a current limiting output stage for short circuit protection. The dc offset control provides the offset to the selected waveforms center reference. The dc offset can be set by voltage at the external dc offset connector. The output amplifier establishes the generator 0 dB attenuation reference. An output attenuator decreases this reference amplitude in operator selected 20 dB steps. The attenuator consists of three voltage dividers. Attenuation between the steps is provided by the attenuation vernier.

4.3 TRIGGER AND GATE CONTROL

Generator operation is controlled by allowing or preventing the timing capacitor to charge. Figure 4-3 shows in detail this portion of the circuit. For continuous operation, the trigger amplifier maintains a positive level above the positive peak developed by the charging capacitors. This reverse biases (turns off) the start/stop diode, and the trigger amplifier does not interfere with continuous operation.

When the trigger amplifier outputs some level below the positive peak charging level, the diode is forward biased (turned on) to sink the integrating current from the current source, preventing the capacitors from charging to the positive peak. This stops waveform generation and holds the triangle output at some dc level called the trigger baseline. The trigger baseline is the level where a triangle waveform cycle starts and where it stops. This baseline is directly applicable to the triangle waveform and thus affects the sine wave. The square wave levels, output via the hysteresis switch, are not affected by the triangle baseline levels.

The normal trigger baseline is zero volts, analogous to 0° phase of a sine or triangle waveform. The trigger start/stop control offsets the trigger amplifier output and can change the baseline for starting and stopping a sine or triangle waveform from its negative peak (−90°) to its positive peak (+90°) range. At the extreme positive peak level setting though, the diode is again reverse biased and generator operation goes continuous.

When charging level is being held, the positive current generator still varies its output with corresponding frequency control inputs. These varying currents must be sunk through the diode to keep the timing capacitors from varying their charge, and thus varying the trigger baseline. The baseline compensation circuit monitors the output from the positive current generator to control the trigger amplifier and thus control the necessary compensating current through the diode.

The trigger control logic determines that after a waveform starts, it always stops at a complete cycle and at the same phase at which it started. The trigger control logic latches the trigger amplifier for an enabling output from the time the cycle starts to when the negative peak of the last cycle is reached (just one cycle in the trigger mode). Upon reaching the negative peak, the timing capacitor continues charging positive again, but stops upon reaching the trigger baseline. A square wave from the hysteresis switch synchronizes the last negative peak time for unlatching the trigger amplifier for its trigger baseline output.

The generator mode control circuitry (not shown) determines whether the trigger control logic is to be fired for just one cycle, or is to be held on for the duration of the trigger input. When in gate mode, the trigger is directly coupled for controlling the trigger control logic. In the trigger mode, the squaring circuit output is converted by a one-shot to a narrow pulse which fires the trigger control logic.

The squaring circuit is a level detector that generates a square pulse for the duration of a trigger signal above the set trigger level. The pulse is also generated for the duration the manual trigger switch is held down in gate mode, and fires one cycle in triggered mode.

4.4 PULSE OUTPUTS

The pulse outputs are based on the square wave from the basic generator circuit (see figure 4-1); the pulse frequency is controlled by the frequency dial, frequency vernier and VCG voltage in the same manner as the waveforms. The square wave is first modified to the sync pulse by a one-shot circuit; then the normal/double/delayed pulse selector switch sets or inhibits AND gates to distribute the sync pulse to the delay one-shot and the width one-shot circuits. When the switch is in normal position, the sync pulse is gated to the width one-shot; the delay one-shot is bypassed. When the switch is in delayed position, the sync pulse is gated to the delay one-shot only. With the switch in the double position, the sync pulse is gated to both the delay and width one-shots.

Pulse width of the width and delay one-shot pulses can be varied by the front panel width and delay controls, respectively. The resulting pulse is gated by the selection of a pulse width value rather than the square wave (⊓⊔) detent on the pulse width switch. The pulse or the basic generator square wave, as selected by the pulse width control, is sent to a buffer circuit and output as TTL, $\overline{\text{TTL}}$, ECL and $\overline{\text{ECL}}$ pulses. The pulse or square wave is also routed to another buffer which is set by the selection of PULSE, $\overline{\text{PULSE}}$ or a

waveform with the front panel function switch. This output, a normal pulse or a complemented pulse, is routed to the square wave shaper and output, if selected, through the output amplifier as a variable amplitude pulse. The pulse modes of normal, delayed and double are shown as timing diagrams in figures 4-4, 4-5 and 4-6.

4.5 WIDTH AND DELAY ONE-SHOTS

The pulse width and delay one-shots feature front panel adjustable current sources to regulate the capacitor charge time and as a result, the one-shot pulse width. The steady state condition of the one-shot circuit is as shown in figure 4-7: Upon triggering, $\overline{Q}$ goes low, the switch transistor switches off and the capacitor begins to charge. When the voltage across the capacitor is sufficient, the level detector senses the set level, the flip-flop is cleared and the circuit reverts to its steady state condition. The duty cycle of the one-shots is limited by the capacitor discharge time when returning to steady state conditions.

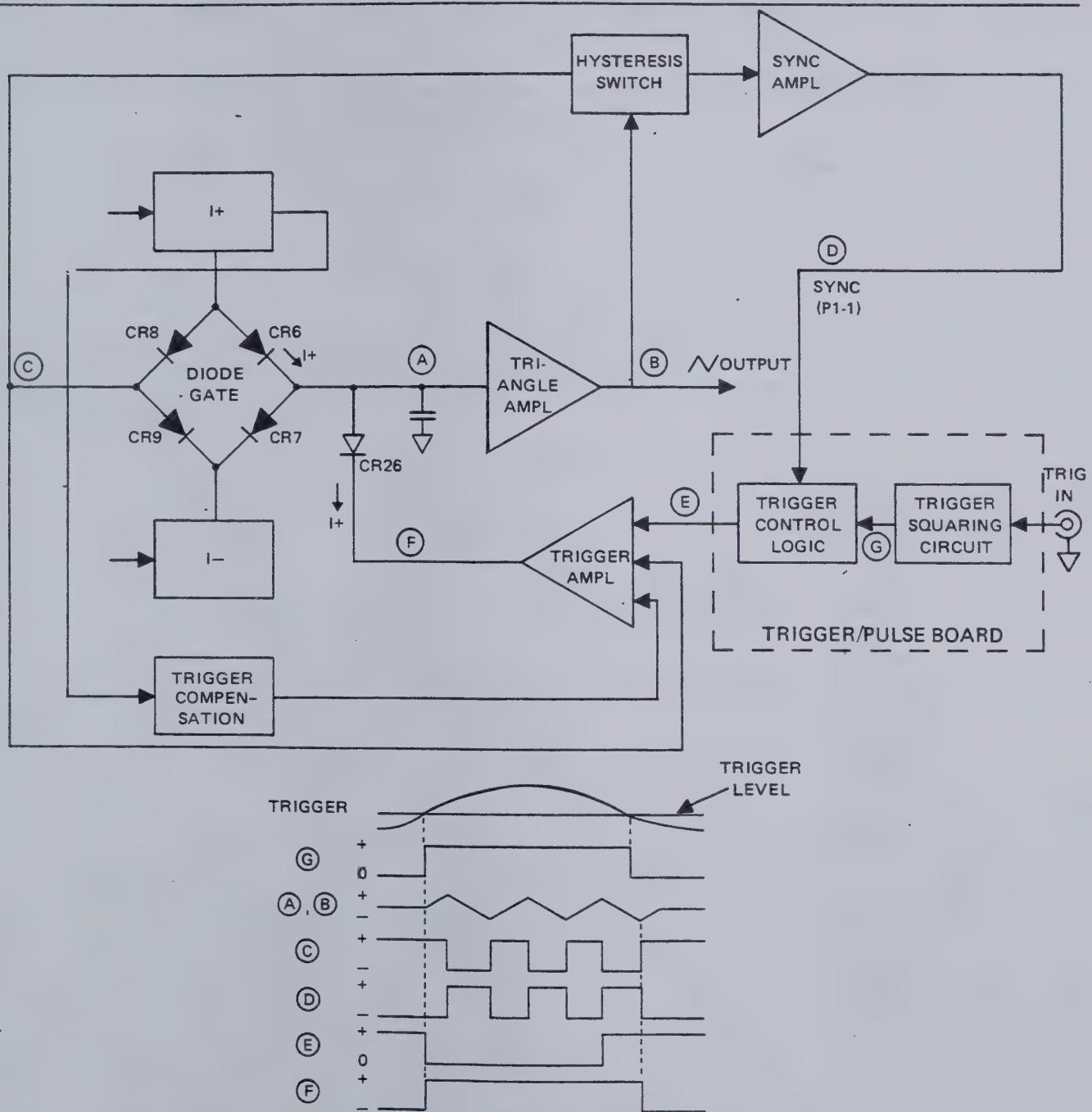


Figure 4-3. Trigger Circuit and Timing

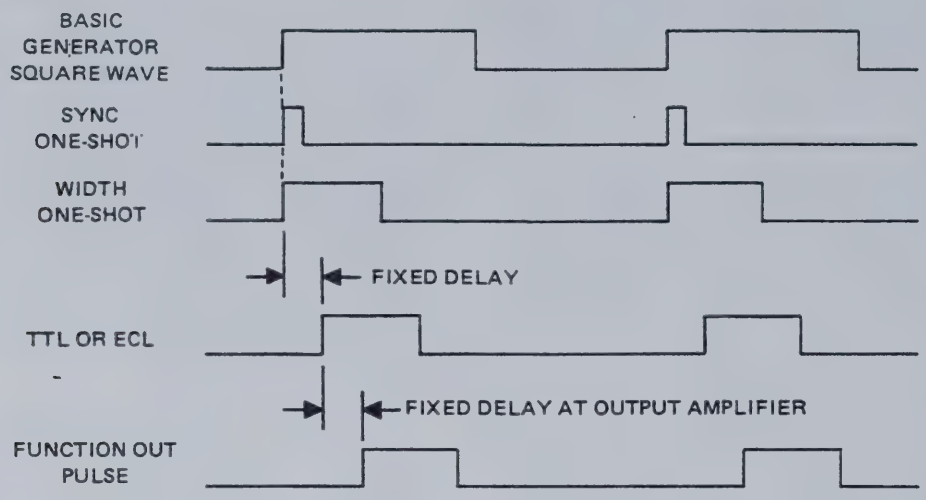


Figure 4-4. Normal Mode Timing

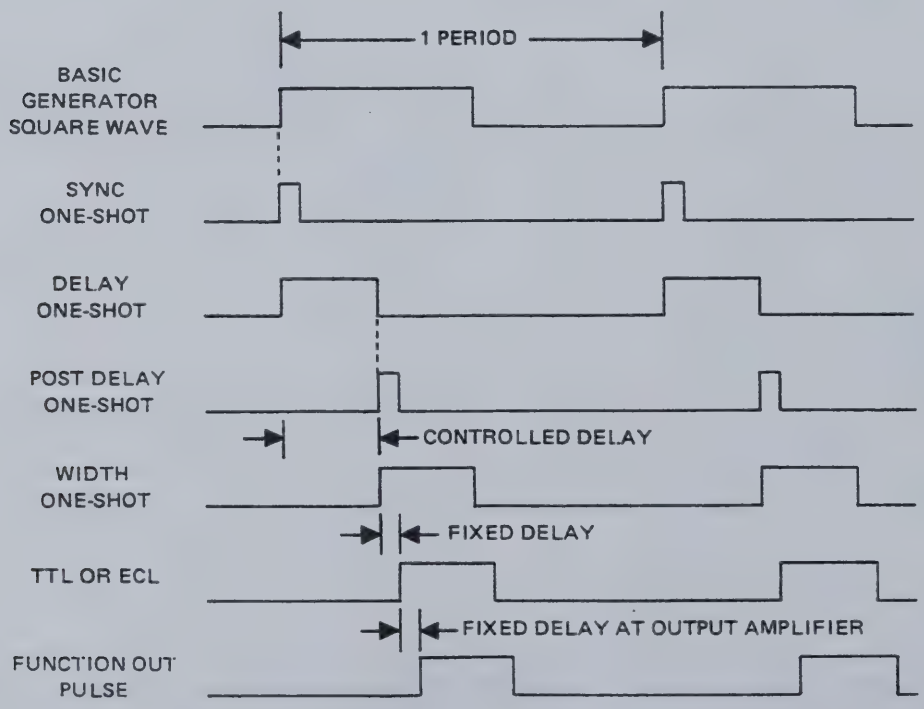


Figure 4-5. Delayed Mode Timing

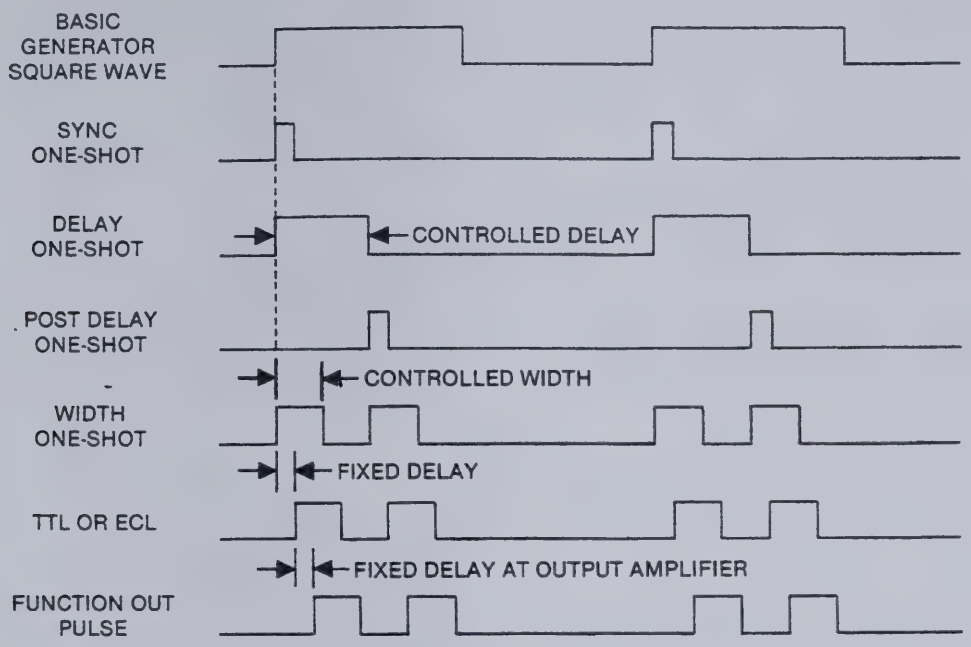


Figure 4-6. Double Mode Timing

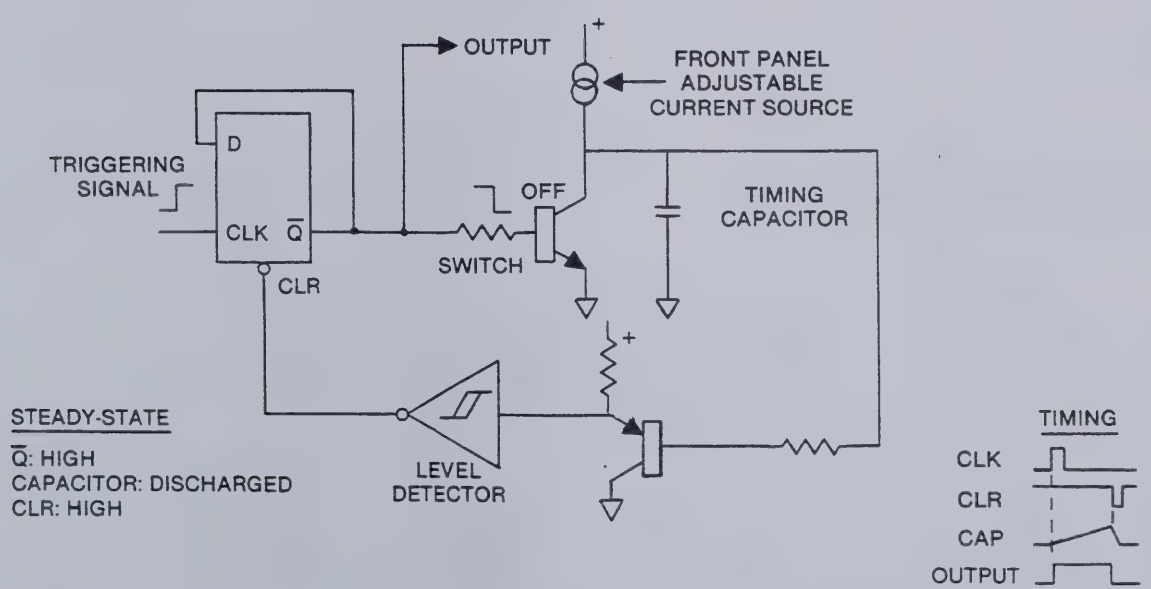


Figure 4-7. Width and Delay One-Shots

NOTE

The completion of the calibration procedure returns the instrument to correct alignment.

CALIBRATION LIMITS AND TOLERANCES ARE NOT INSTRUMENT SPECIFICATIONS

Instrument specifications are given in Section 1 of this manual.

SECTION 5
MAINTENANCE

5.1 FACTORY REPAIR

Wavetek maintains a factory repair department for those customers not possessing the necessary personnel or test equipment to maintain the instrument. If an instrument is returned to the factory for calibration or repair, a detailed description of the specific problem should be attached to minimize turnaround time.

5.2 INSPECTION AND PERFORMANCE VERIFICATION

Inspect and verify instrument performance every six months or at a frequency determined from actual instrument usage. Inspect the exterior for damage, cleanness and loose knobs. Use a soft cloth dampened with commercial window cleaner to clean the exterior. When calibrating or repairing the instrument, inspect the instrument interior for heat damage and loose wires. This instrument requires no lubrication. Verify performance by performing the calibration procedures.

5.3 REQUIRED TEST EQUIPMENT

Refer to table 1-1 for equipment required to perform the calibration procedures.

5.4 REMOVING GENERATOR COVERS

WARNING

With covers removed, several dangerous voltage points may be exposed. Contact with these points could cause serious injury or death.

1. Invert the instrument; remove the four screws in the cover.
2. Turn the instrument upright; remove the top cover; and remove the four screws securing the bottom cover.
3. Replace the top cover.

NOTE

Remove the covers only when it is necessary to make adjustments or measurements.

5.5 CALIBRATION

After referring to the following preliminary data, perform calibration, as necessary, per table 5-1. If performing partial calibration, check previous settings and adjustments for applicability. See figures 5-1 and 5-2 for calibration point location.

1. Unless otherwise noted, all measurements made at the 50Ω OUT connector should be terminated into a 50Ω (±0.1%) load.

2. Allow the unit to warm up at least 30 minutes for final calibration. Keep the instrument covers on to maintain heat. Remove covers only to make adjustments or measurements.

3. Verify operation in TRIG and GATE modes by connecting an external generator to the TRIG IN BNC and observing proper operation of TRIGGER LEVEL and TRIGGER START/STOP controls (paragraph 3.1).

4. Verify SYNC OUT is an approximate 30 ns positive pulse into 50Ω and that GCV OUT is a voltage proportional to dial position with a 2V max (open circuit).

5. Properly terminate the TTL, $\overline{\text{TTL}}$, ECL and $\overline{\text{ECL}}$ outputs (paragraph 3.2.1) and verify proper operation (paragraph 3.1)

6. After starting the calibration by connecting the unit to an ac source and setting the front panel switches as follows; invert the instrument.

Dial	.02
FREQ MULT	100K
FREQ VERNIER	Full cw
GENERATOR MODE	CONT
TRIGGER LEVEL	Full ccw
TRIGGER START/STOP	0° CAL
PULSE DELAY	50 ns ▮ 100 ns
PULSE DELAY VARIABLE	cw
Pulse Mode	DOUBLE
PULSE WIDTH	OFF
PULSE WIDTH VARIABLE	12 o'clock
DC OFFSET	OFF
FUNCTION	DC
ATTENUATION	20 ▮ 0
ATTENUATION VERNIER	Full ccw
POWER	ON

Table 5-1. Calibration Chart

Step	Check	Tester	Cal Points	Control Settings	Adjust	Desired Results	Remarks
1	Power Supply	DVM	C112			+15 ±0.05 Vdc	If voltage is incorrect, proceed to step 3.
2			C111			−15 ±0.05 Vdc	If voltage is correct, proceed to step 9.

Steps 3 - 8 are on the trig/pulse board. Place the cover on the generator and turn it upright. Remove the top cover for access to the trig/pulse board.

3	Power Supply	DVM	TP1 (COM) TP2 (+15 Vdc)		R27	+15 ±0.02 Vdc	
4			TP3			−15 ±0.05 Vdc	
5			TP4			+24 ±1 Vdc	
6			TP5			−24 ±1 Vdc	
7			TP6			+5 ±0.2 Vdc	
8			TP7		R18	−5.2 ±0.01 Vdc	

If steps 3 - 8 were performed, place the cover on, invert the generator and warm up the generator for ½ hour. Remove the uppermost cover for generator board access when necessary.

9	Cap Mult Balance	DVM (DCV)	TP5 (COM) TP1		R55	< 5 mV	
10	Power Ampl Balance		FUNC-TION OUT		R181	0 ±0.01 Vdc	Terminate with 50Ω load.
11	Preamp Balance			ATTENUATION VERNIER: full cw	R252	0 ±0.01 Vdc	
12	VCG Null	Scope		FUNCTION: ⊓	R12	Minimum frequency shift	Observe one cycle at 50μs/div. Alternately short and open VCG IN BNC while adjusting R12.
13	1000:1 Freq			FREQ VERNIER: full ccw	R13 BOD Freq Adj	< 1 cycle (< 200 Hz)	Scope on .5 ms/div.

Table 5-1. Calibration Chart (Continued)

Step	Check	Tester	Cal Points	Control Settings	Adjust	Desired Results	Remarks
14	1000:1 Sym-metry	Scope	FUNC-TION OUT		R16 BOD Sym	Symmetrical wave-form	*NOTE: Steps 13 and 14 are interactive.*
15	Main Sym-metry			FREQ VERNIER: full cw Dial: 2.0 FREQ MULT: 1K	R35 TOD Sym	Symmetrical wave-form	
16	Sine Distor-tion	Distortion Analyzer, Scope		FUNCTION: ∿	R120 Triangle Balance	Symmetrical residue	Connect FUNCTION OUT to distortion analyzer and distor-tion analyzer output to scope. Set scope to .1V/div. Sync scope to SYNC OUT BNC loaded into 50Ω.
17					R93, R107 Triangle Peaks	Minimum sine distortion	If either adjustment is going near a stop, re-center both pots and return to step 15.
18	Main Freq	Frequency Counter/ Timer		FUNCTION: ⊓	R4 TOD Freq Adj	2000 ±10 Hz	Remove SYNC OUT cable.
19	Cap Mult Freq			FREQ MULT: 10	R48	20 ±0.1 Hz	
20	X 10M Freq			FREQ MULT: 10M Dial: Vary	C40	Best frequency tracking over X 10M range	
21	X 1M Freq			FREQ MULT: 1M Dial: Vary	C34	Best frequency tracking over X 1M range	This adjustment must be made each time step 20 is done.
22	Trigger Baseline	Scope		FUNCTION: ∿ GENERATOR MODE: TRIG Dial: Vary	R162	Minimum shift of baseline around 0 Vdc	

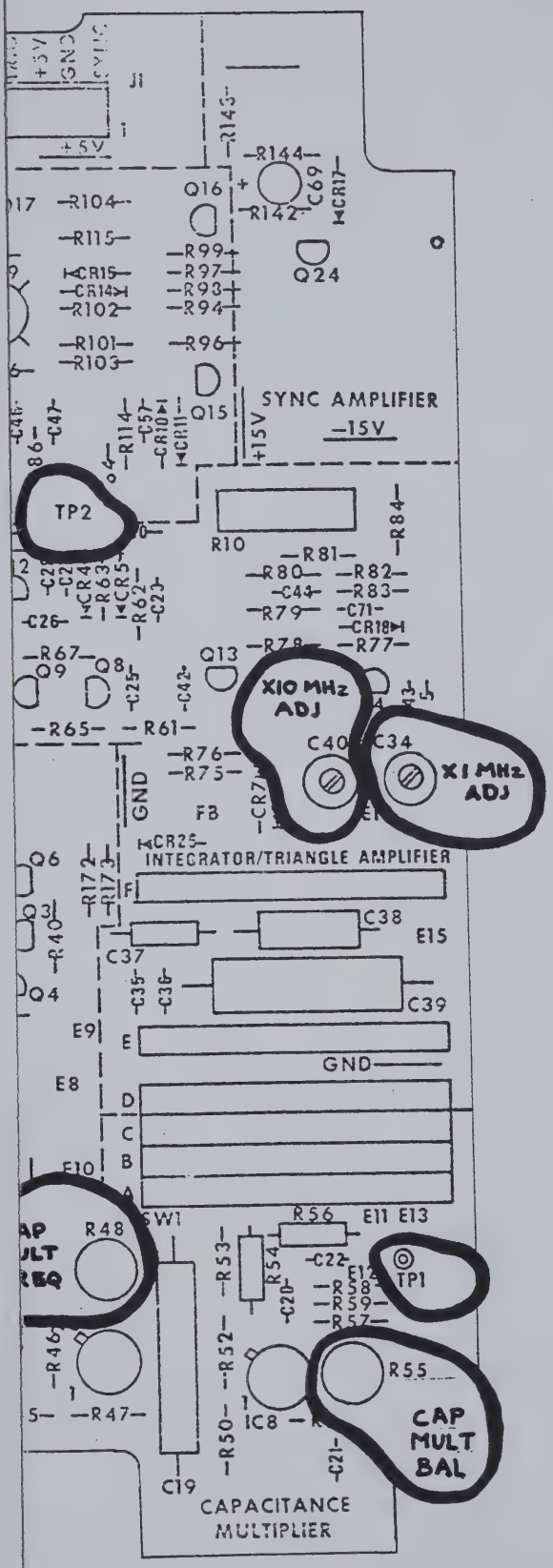


Figure 5-1. Generator Board

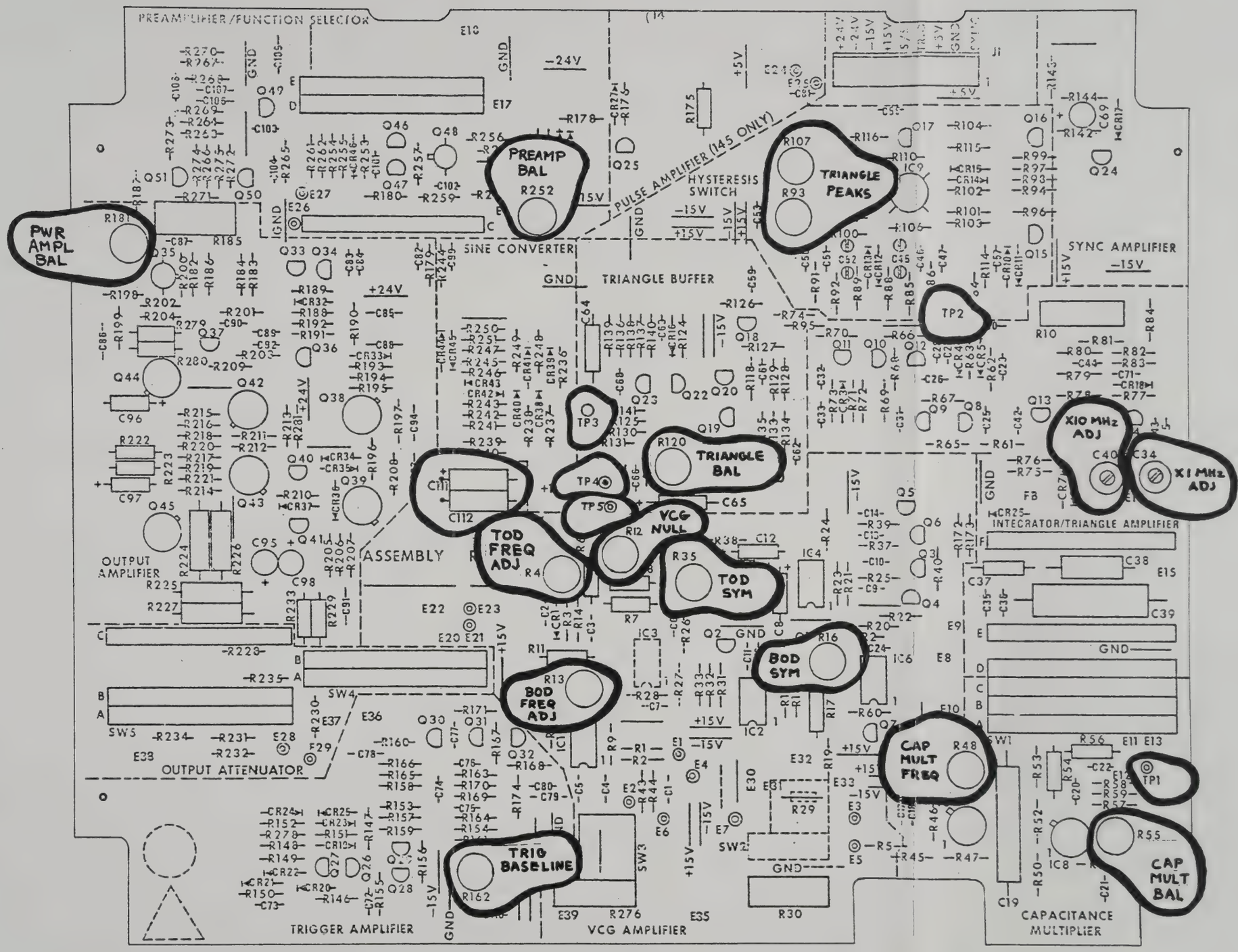


Figure 5-1. Generator Board

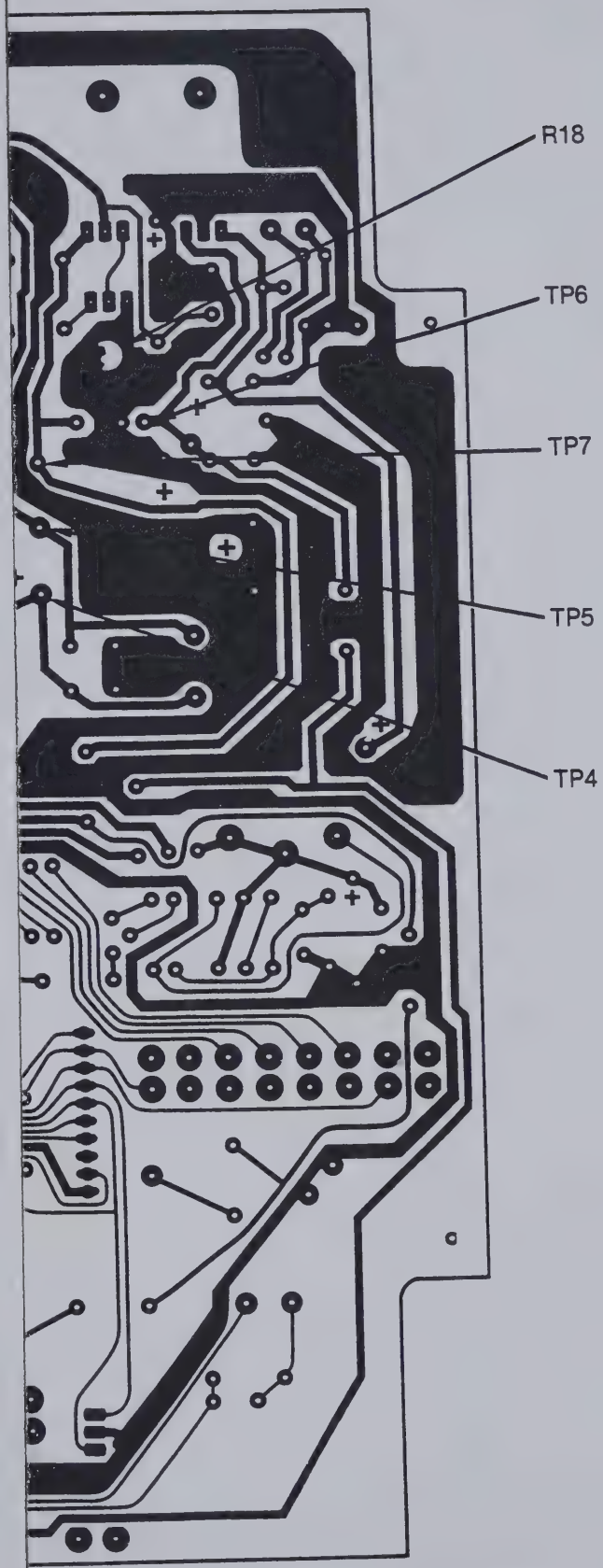


Figure 5-2. Trig/Pulse Board

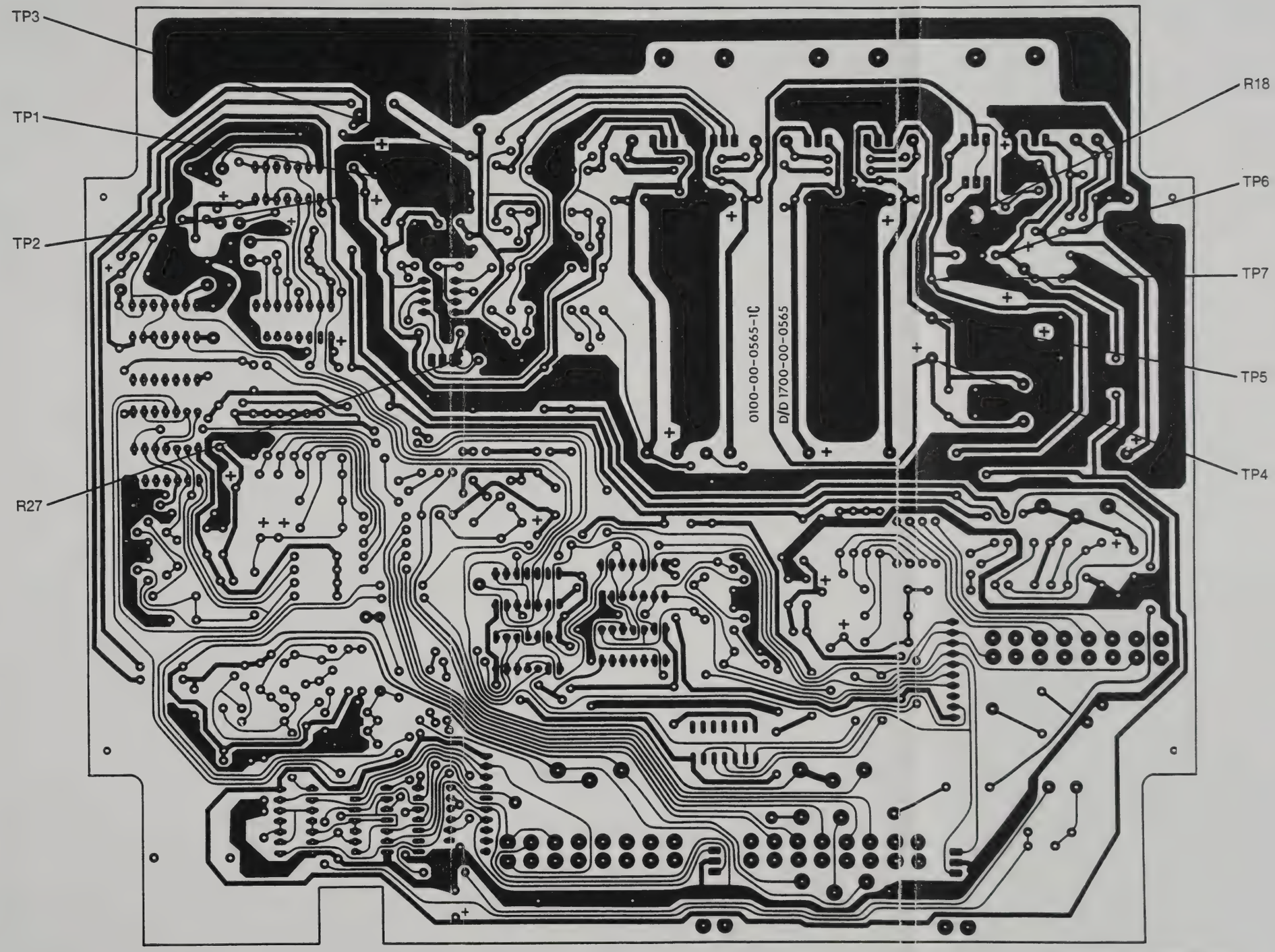


Figure 5-2. Trig/Pulse Board

SECTION 6
TROUBLESHOOTING

6.1 FACTORY REPAIR

Wavetek maintains a factory repair department for those customers not possessing the necessary personnel or test equipment to maintain the instrument. If an instrument is returned to the factory for calibration or repair, a detailed description of the specific problem should be attached to minimize turnaround time.

6.2 TROUBLESHOOTING CHARTS

Troubleshooting charts are given in figures 6-1 thru 6-9. The charts do not cover every possible trouble, but will be an aid in systematically isolating faulty components.

Figure 6-1. Initial Checks, Generator Board
Figure 6-2. Generator Loop Checks, Generator Board
Figure 6-3. VCG Checks, Generator Board
Figure 6-4. Generator Output Checks
Figure 6-5. Trigger and Gate Mode Checks, Trig/Pulse Board
Figure 6-6. Power Supply Checks, Trig/Pulse Board
Figure 6-7. Generator Input and Output Checks
Figure 6-8. Pulse Mode Checks, Trig/Pulse Board
Figure 6-9. Pulse Generator Checks, Trig/Pulse Board

6.3 TROUBLESHOOTING INDIVIDUAL COMPONENTS

6.3.1 Transistor

1. A transistor is defective if more than one volt is measured across its base emitter junction in the forward direction.

2. A transistor when used as a switch may have a few volts reverse bias voltage across base-emitter junction.

3. If the collector and emitter voltages are the same, but the base emitter voltage is less than 500 mV forward voltage (or reversed bias), the transistor is defective.

4. A transistor is defective if its base current is larger than 10% of its emitter current (calculate currents from voltage across the base and emitter series resistors).

5. In a transistor differential pair (common emitter stages), either their base voltages are the same in normal operating condition, or the one with less forward voltage across its base emitter junction should be off (no collector current); otherwise, one of the transistors is defective.

6.3.2 Diode

1. A diode is defective if there is greater than one volt (typically 0.7 volt) forward voltage across it.

6.3.3 Operational Amplifier (e.g., 741, 1458)

1. The "+" and "–" inputs of an operational amplifier will have less than 15 mV voltage difference when operating under normal conditions.

2. When the output of the amplifier is connected to the "–" input (voltage follower connection), the output should be the same voltage as the "+" input voltage; otherwise, the operational amplifier is defective.

6.3.4 Capacitor

1. Shorted capacitors have zero volts across their terminals.

2. Opened capacitor can be located (but not always) by using a good capacitor connected in parallel with the capacitor under test and observing the resulting effect.

6.3.5 Digital TTL IC's (e.g. 7400 Series)

1. The device is operating correctly if the output high state is $>$ +2.4V and low state is $<$ +0.5V.

2. The input must show the same two levels as in step 1. If the levels are between +0.8V and +2.0V, the connection to the driving circuit output is open.

6.4 DISASSEMBLY/REASSEMBLY INSTRUCTIONS (For the Bench Instrument)

6.4.1 Disassembly

WARNING

With covers removed, several dangerous voltage points may be exposed. Contact with these points could cause serious injury or death.

Review the following procedure and identify components using chassis assembly drawing 0102-00-0575 (refer to Section 7).

1. Disconnect the power plug from the line receptacle.

2. Invert the instrument and remove four screws fastening the bottom cover to the top cover.

3. Turn the instrument upright and remove the top cover.

4. Remove the four screws fastening the lower board to the bottom cover standoffs.

5. Remove the instrument from the bottom cover and invert the instrument.

6. Unsolder the No. 18 black wire at the solder lug of FUNCTION OUT BNC.

7. Disconnect the following wires from the generator board locations:

   E28 (coax) and E29 (shield) function output;
   E26 (yellow) and E27 (white-black) Ext DC;
   E6 (green) and E7 (white-black), GCV;
   E1 (brown) and E2 (white-black), VCG;
   E4 (red), E5 (brown) and E3 (orange) dial pot.

8. Remove all knobs except the dial knob.

9. Remove four screws fastening the generator board (upper board in this inverted position) to standoffs between the boards.

10. Tilt the front panel forward and slide it forward enough to clear the detents of the generator board and lift the generator board free. Slide the front panel back over the detents of the remaining board.

11. For troubleshooting, set the generator board component side up on the working surface alongside the rest of the instrument. Ensure that the generator board is lying on a nonconductive surface and it is not making physical contact with the rest of the instrument. A jumper wire may be attached between E3 and E4 of the generator board to simulate a top-of-dial frequency voltage. It may be necessary to replace some of the knobs to set up various test conditions.

    At this point, the entire instrument is accessible for troubleshooting. To reassemble, perform steps 6 through 16, paragraph 6.4.2.

12. To completely remove the generator board, disconnect the following wires from the generator board:

    E21 pulse disable;
    E23 pulse select;
    E24 pulse coax;
    E25 pulse coax shield.

    Disconnect the Molex connector. To reassemble, perform steps 1 through 16, paragraph 6.4.2.

13. To remove the trigger/pulse board, remove the two screws connecting the power switch to the trigger/pulse board.

14. Unsolder the following wires from the trigger/pulse board:

    E1 (blue);
    E2 (white-blue);
    E3 (blue);
    E4 (red);
    E5 (white-red);
    E6 (red);
    E7 (green);
    E8 (green);
    E9 (blue);
    E10 (red);
    E11 (violet);
    E12 (white);
    E13 (white);
    E14 (white);
    E15 (gray);
    E16 (orange);
    E17 (red);
    E18 (white-black);
    E19 (yellow);
    E22 (brown);
    E48 (green);
    E30 (coax, center conductor);
    E31 (coax, shield);
    J6 ($\overline{\text{TTL}}$ BNC), E40 and E41;
    J5 ($\overline{\text{TTL}}$ BNC), E42 and E43;
    J4 ($\overline{\text{ECL}}$ BNC), E44 and E47;
    J3 ($\overline{\text{ECL}}$ BNC), E45 and E46.

15. Unsolder the green-yellow wire connecting the front and rear panels.

16. Slide out the trigger/pulse board.

6.4.2 Reassembly

Refer to the chassis assembly drawing 0102-00-0575 (refer to Section 7) for correct positioning of the reassembled components.

1. Turn the unit upside down (bottom of unit up).

2. Insert the trigger/pulse board (component side up).

3. Solder the following wires to the board:

   E1 (blue);
   E2 (white-blue);
   E3 (blue);
   E4 (red);
   E5 (white-red);
   E6 (red);
   E7 (green);
   E8 (green);
   E30 (coax-center conductor);
   E31 (coax-shield);
   J6 ($\overline{\text{TTL}}$ BNC), E40 and E41;
   J5 ($\overline{\text{TTL}}$ BNC), E42 and E43;
   J4 ($\overline{\text{ECL}}$ BNC), E44 and E47;
   J3 ($\overline{\text{ECL}}$ BNC), E45 and E46;
   E9 (blue);
   E10 (red);
   E11 (violet);
   E12 (white);
   E13 (white);
   E14 (white);
   E15 (gray);
   E16 (orange);
   E17 (red);
   E18 (white-black);
   E19 (yellow);
   E22 (brown);
   E48 (green).

4. Secure the power switch to the trigger/pulse board.

5. Solder the green-yellow wire connecting the front and rear panels.

6. Slide in the generator board (component side up).

7. Secure the four screws attaching the generator and trigger/pulse boards together.

8. Install the two screws securing the generator to the left side panel mounting brackets.

9. Push the front panel back over the board detents.

10. Connect the following wires to the generator board:

    E4 (red), E5 (brown) and E3 (orange) dial pot;
    E1 (brown) and E2 (white-black) VCG;
    E6 (green) and E7 (white-black) GCV;
    E28 (coax, center conductor) and E29 (coax shield);
    E26 (yellow) and E27 (white-black) Ext DC;
    E23 from E34 of trigger/pulse board;
    E21 from E39 of trigger/pulse board;
    E24 from E37 of trigger/pulse board;
    E25 from E38 of trigger/pulse board.

    Connect the Molex connector.

11. Solder the large No. 18 ground wire to the output BNC.

12. Turn the instrument upright and slide front and rear panels into the bottom cover. This spaces them correctly for proper knob alignment.

13. Install all knobs. Align them so that they match the front panel graphics and are spaced approximately 1/16th of an inch away from the surface the front panel.

14. Install four screws to secure the lower board to the bottom cover standoffs

15. Replace the top cover and invert the instrument.

16. Secure the top cover with four screws into bottom cover.

6.5 DISASSEMBLY/REASSEMBLY INSTRUCTIONS (For the Rack Mounted Instrument)

6.5.1 Disassembly

Review the following procedure and identify components using drawings 0102-00-0621 and 0102-00-0575 (refer to Section 7).

1. Disconnect the power plug from the line receptacle.

2. Turn the unit top side up.

3. Remove the four top cover screws and cover.

4. Invert the unit (bottom side up).

5. Remove the four bottom cover screws and cover.

6. Remove all front panel knobs except the frequency dial knob.

7. Position the unit upside down (bottom of unit) with the front panel away from you.

8. Remove the three screws holding the heat sinks of the trigger/pulse board to the rear panel.

9. Remove the two screws attaching the front panel to the right side panel (labeled "R.H." in drawing 0102-00-0621).

10. Remove the two screws securing the rear panel to the left side panel.

11. Remove the two screws securing the generator board to the left side panel mounting brackets.

12. Unsolder the large No. 18 (black) ground on the function output BNC.

13. To remove the generator board, disconnect the following wires from the generator board locations:

    E28 (coax) and E29 (shield), function output;
    E26 (yellow) and E27 (white-black), Ext DC;
    E6 (green) and E7 (white-black), GCV;
    E1 (brown) and E2 (white-black), VCG;
    E4 (red), E5 (brown) and E3 (orange), dial pot;
    E23 (pulse select);
    E21 (pulse disable);
    E24 (pulse coax);
    E25 (pulse coax shield).

    Disconnect the Molex connector.

14. Slide the rear panel to the right and backwards. Notice that the wires for the power supply are connected to the rear panel.

15. Remove the two screws attaching the generator board to the mounting brackets on the right side panel.

16. Remove the four screws securing the generator and trigger/pulse boards together.

17. Remove the main board back and upwards.

18. For troubleshooting the generator and trigger/pulse boards, turn the instrument around with the front panel facing you (keep the unit inverted). Place the generator board (component side up) on a working surface with the board on the right side of the unit. Ensure the generator board is lying on a nonconductive surface and not making physical contact with the rest of the unit. Jumper E3 and E4 simulate the top of dial frequency voltage. Pull J1 (Molex connector) from the instrument and plug into position on the generator board. Add the following jumpers between the generator and trigger/pulse board:

Trigger/Pulse	Generator
E34 (pulse select)	E23
E39 (pulse disable)	E21
E37 (pulse coax, center)	E24
E38 (pulse coax, shield)	E25

    It may be necessary to replace some of the knobs to set up various test conditions.

    At this point, the entire instrument is accessible for troubleshooting. To reassemble, perform steps 6 through 19, paragraph 6.5.2.

19. To remove the trigger/pulse board, remove the two screws connecting the power switch to the trigger/pulse board.

20. Unsolder the following wires from the trigger/pulse board:

    E1 (blue);
    E2 (white-blue);
    E3 (blue);
    E4 (red);
    E5 (white-red);
    E6 (red);
    E7 (green);
    E8 (green);
    E9 (blue);
    E10 (red);
    E11 (violet);
    E12 (white);
    E13 (white);
    E14 (white);
    E15 (gray);
    E16 (orange);
    E17 (red);
    E18 (white-black);
    E19 (yellow);

E22 (brown);
E48 (green);
E30 (coax, center conductor);
E31 (coax, shield);
J6 (TTL BNC), E40 and E41;
J5 (TTL BNC), E42 and E43;
J4 (ECL BNC), E44 and E47;
J3 (ECL BNC), E45 and E46.

21. Unsolder the green-yellow wire connecting the front and rear panels.

22. Slide out the trigger/pulse board.

6.5.2 Reassembly

Review the following procedure and identify components using drawings 0102-00-0621 and 0102-00-0575 (refer to Section 7).

1. Turn the unit upside down (bottom of unit up).

2. Insert the trigger/pulse board (component side up).

3. Solder the following wires to the board:

4. Secure the power switch to the trigger/pulse board.

E1 (blue);
E2 (white-blue);
E3 (blue);
E4 (red);
E5 (white-red);
E6 (red);
E7 (green);
E8 (green);
E30 (coax-center conductor);
E31 (coax-shield);
J6 (TTL BNC), E40 and E41;
J5 (TTL BNC), E42 and E43;
J4 (ECL BNC), E44 and E47;
J3 (ECL BNC), E45 and E46;
E9 (blue);
E10 (red);
E11 (violet);
E12 (white);
E13 (white);
E14 (white);
E15 (gray);
E16 (orange);
E17 (red);
E18 (white-black);
E19 (yellow);
E22 (brown);
E48 (green).

5. Solder the green-yellow wire connecting the front and rear panels.

6. Slide in the generator board (component side up).

7. Secure the four screws attaching the generator and trigger/pulse boards together.

8. Install the two screws securing the generator to the left side panel mounting brackets.

9. Attach all knobs to the front panel.

10. Slide the rear panel and right side panel into position. Align the wires with notched locations on the generator board.

11. Install the two screws securing the rear and left side panel.

12. Secure the front and right side panels with two screws.

13. Install the two screws securing the generator to the right side panel mounting brackets.

14. Secure the heat sink to the rear panel using three screws.

15. Connect the following wires to the generator board:

E4 (red), E5 (brown) and E3 (orange) dial pot;
E1 (brown) and E2 (white-black) VCG;
E6 (green) and E7 (white-black) GCV;
E28 (coax, center conductor) and E29 (coax shield);
E26 (yellow) and E27 (white-black) Ext DC;
E23 from E34 of trigger/pulse board;
E21 from E39 of trigger/pulse board;
E24 from E37 of trigger/pulse board;
E25 from E38 of trigger/pulse board;

Connect the Molex connector.

16. Solder the large No. 18 ground wire to the output BNC.

17. Visually inspect the instrument for missing hardware and disconnected wires.

18. Attach top and bottom covers with four screws for each cover.

19. Check the unit for proper operation.

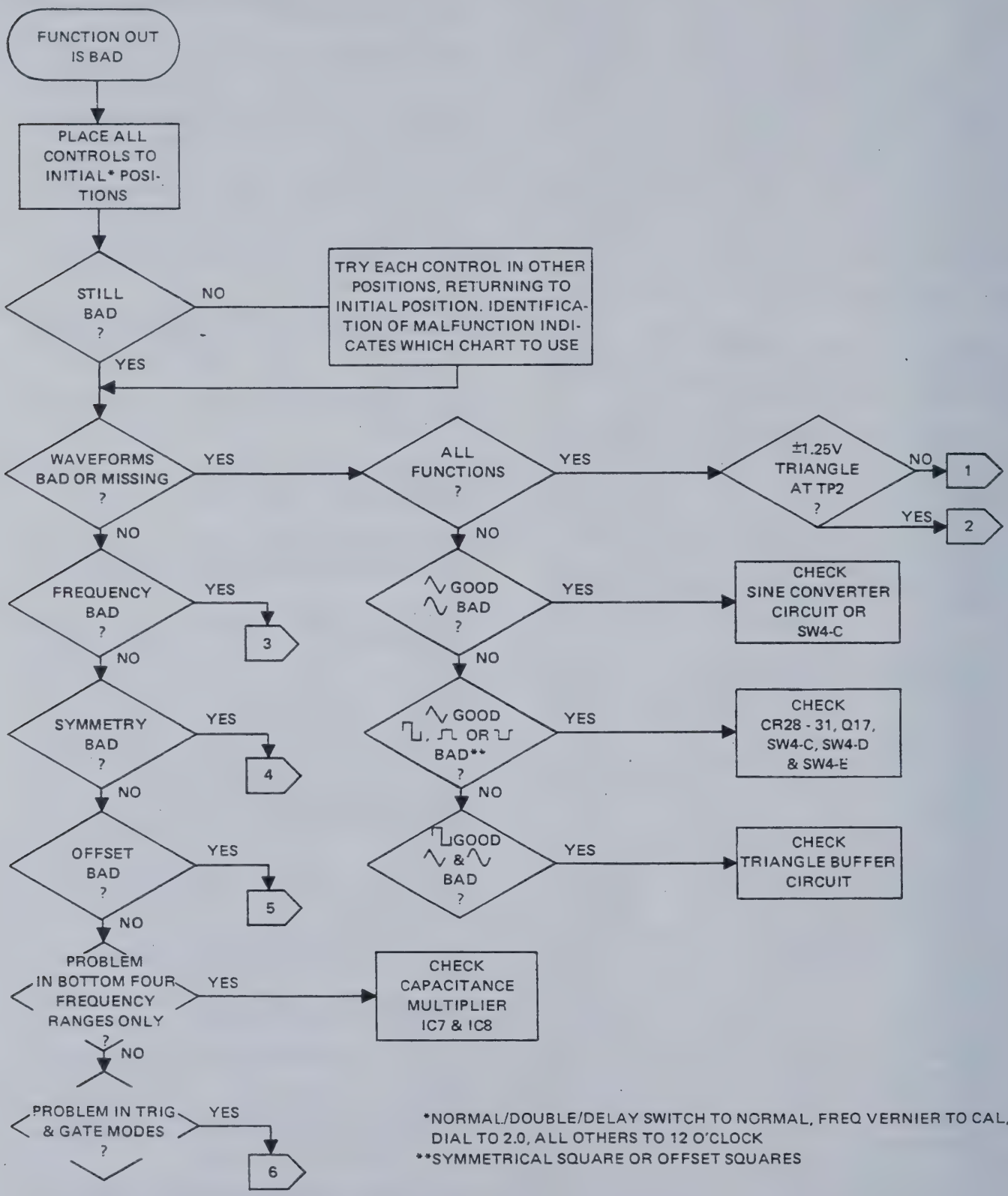


Figure 6-1. Initial Checks, Generator Board

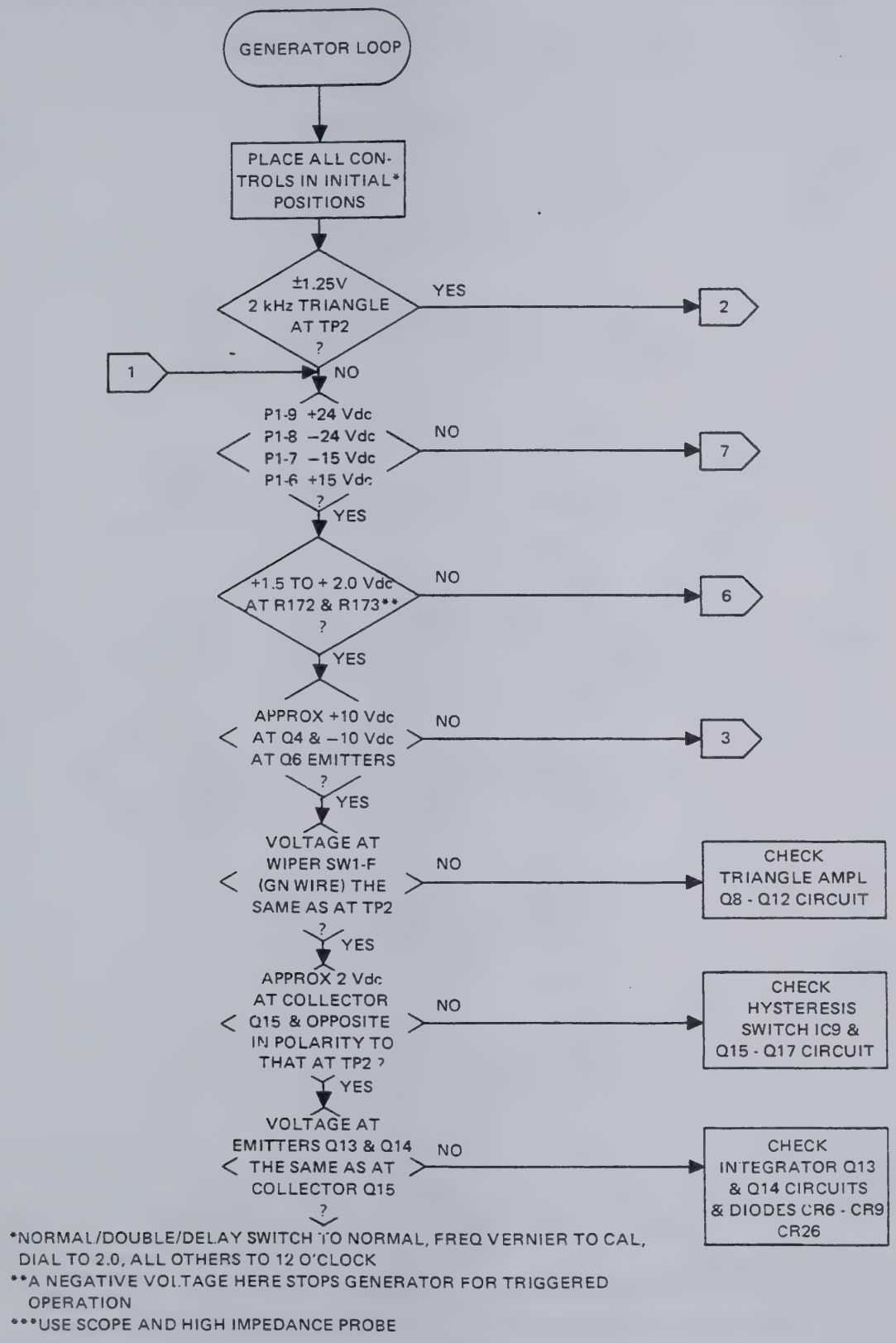
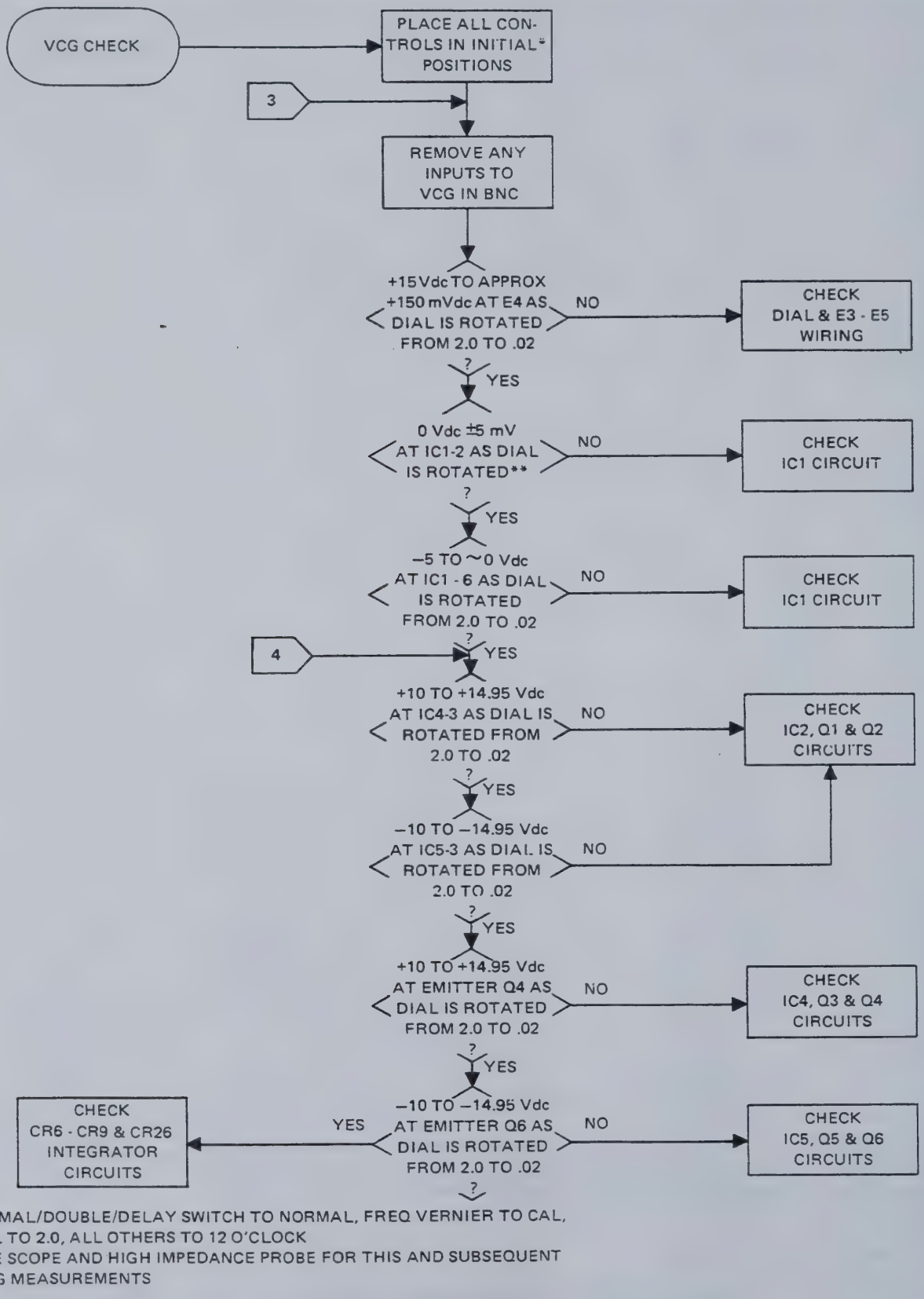


Figure 6-2. Generator Loop Checks, Generator Board



*NORMAL/DOUBLE/DELAY SWITCH TO NORMAL, FREQ VERNIER TO CAL, DIAL TO 2.0, ALL OTHERS TO 12 O'CLOCK

**USE SCOPE AND HIGH IMPEDANCE PROBE FOR THIS AND SUBSEQUENT VCG MEASUREMENTS

Figure 6-3. VCG Checks, Generator Board

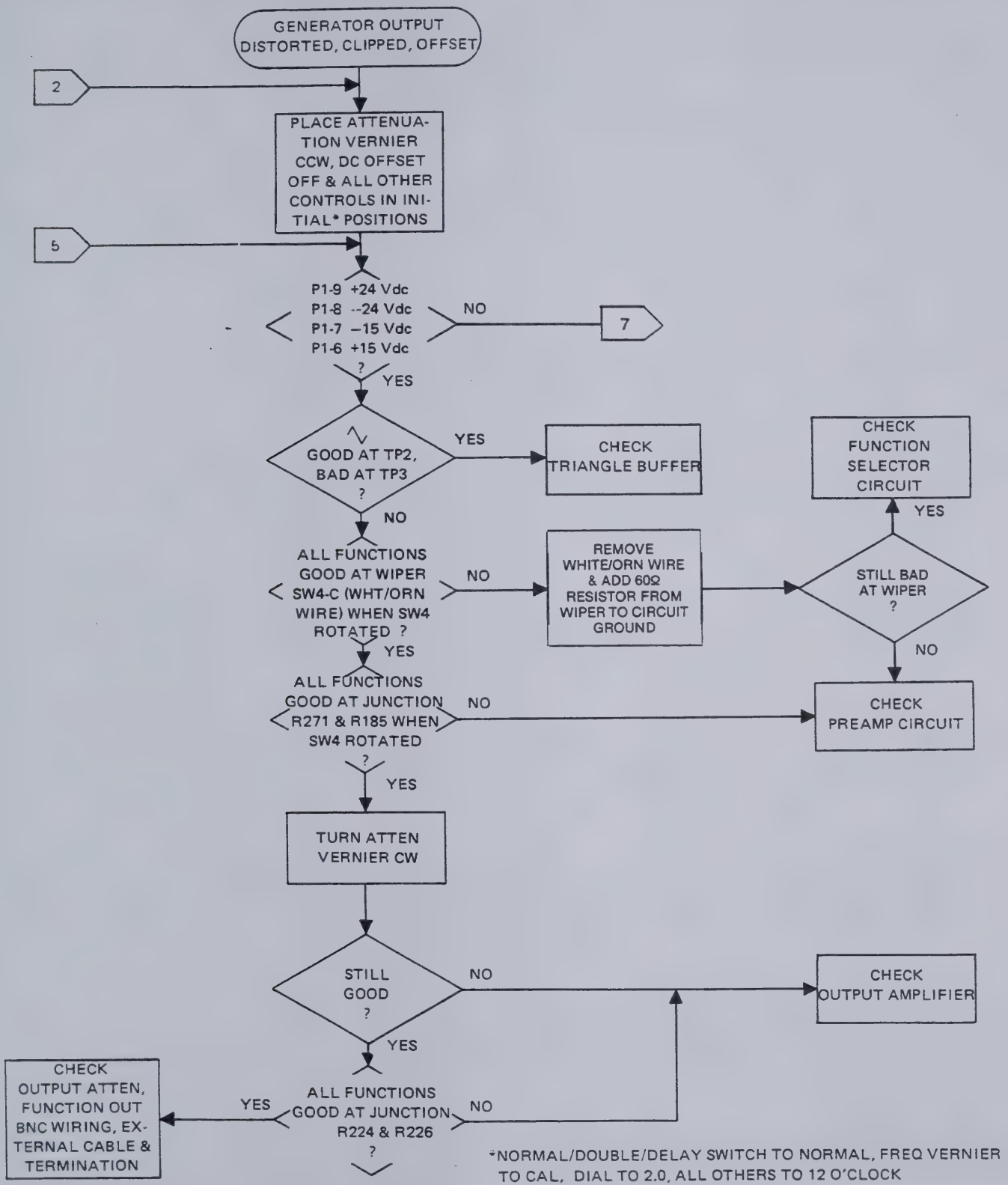
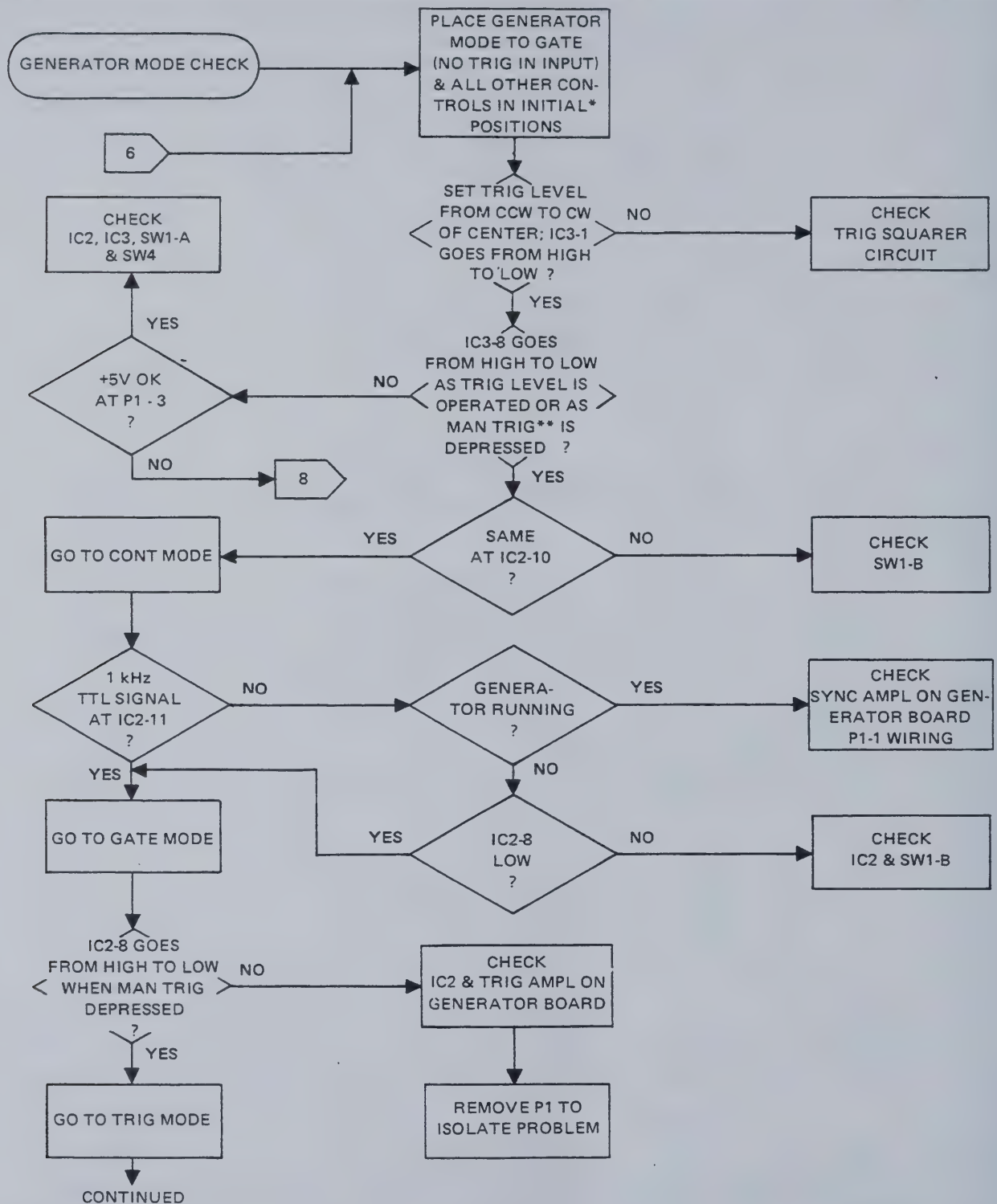


Figure 6-4. Generator Output Checks, Generator Board



*NORMAL/DOUBLE/DELAY SWITCH TO NORMAL, FREQ VERNIER TO CAL, DIAL TO 2.0, ALL OTHERS TO 12 O'CLOCK

**RETURN TRIG LEVEL CCW TO OPERATE MANUAL TRIGGER

Figure 6-5. Trigger and Gate Mode Checks, Trig/Pulse Board (Page 1 of 2)

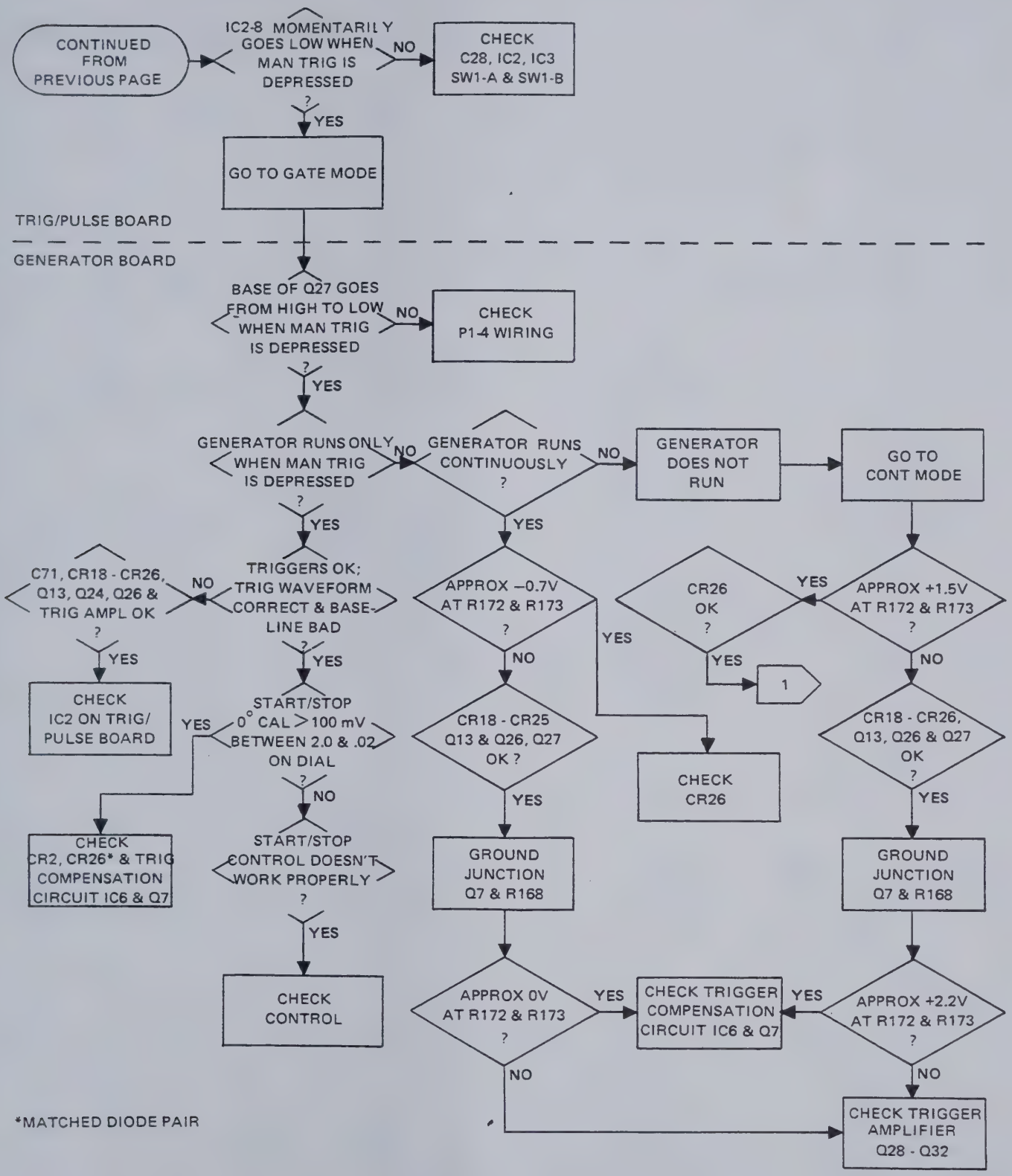


Figure 6-5. Trigger and Gate Mode Checks, Trig/Pulse Board (Page 2 of 2)

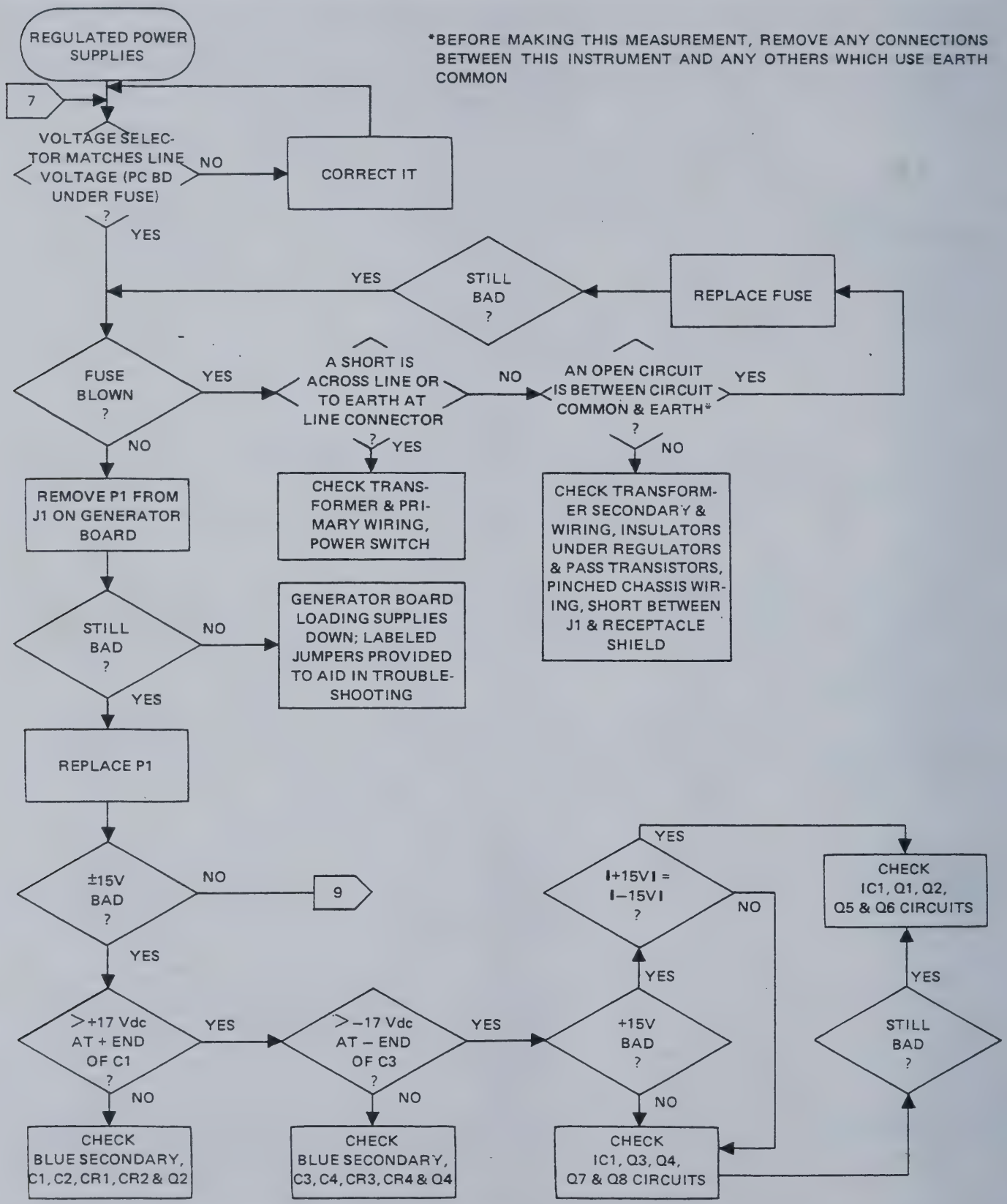


Figure 6-6. Power supply checks, Trig/Pulse Board (Page 1 of 2)

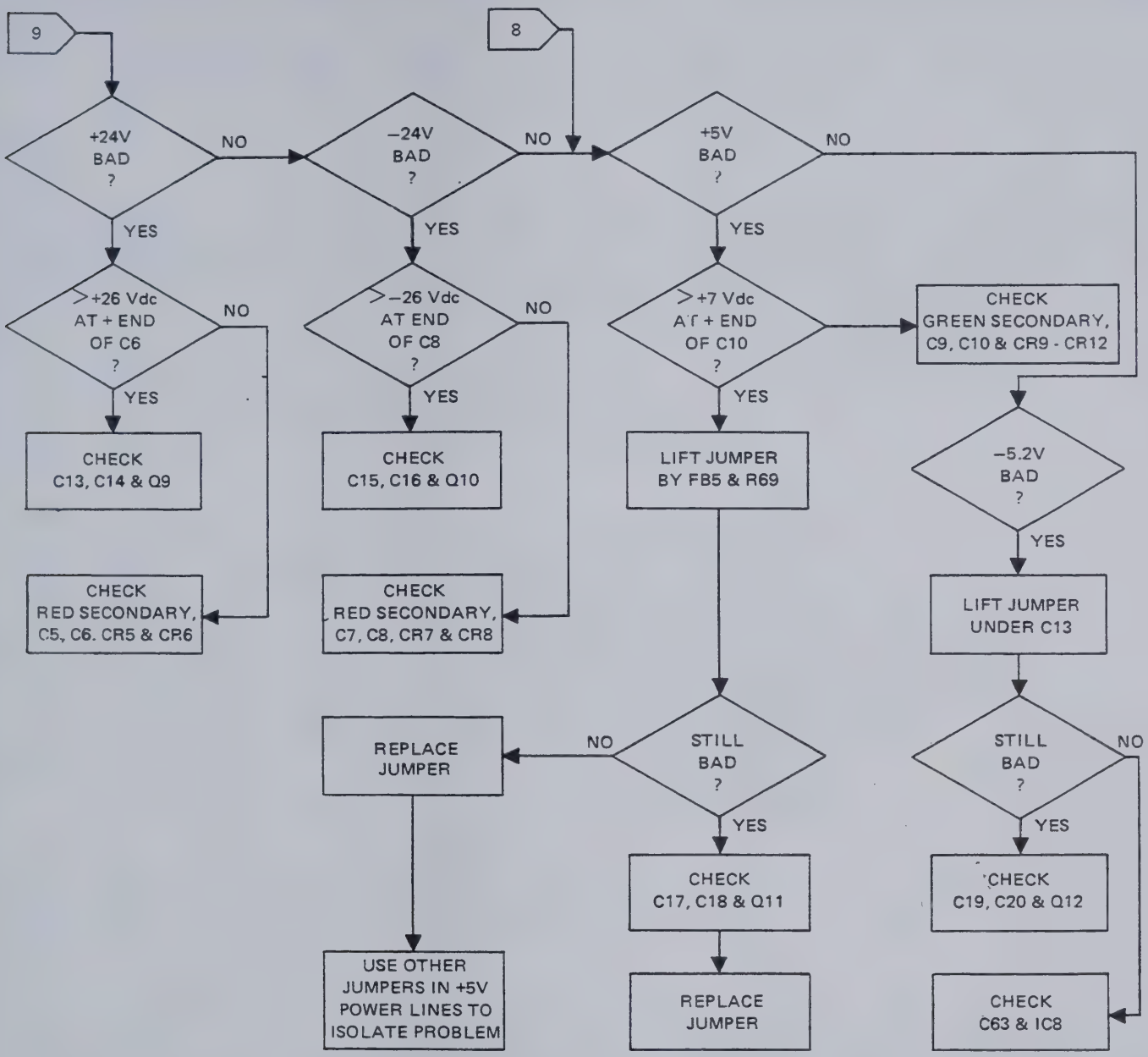


Figure 6-6. Power Supply Checks, Trig/Pulse Board (Page 2 of 2)

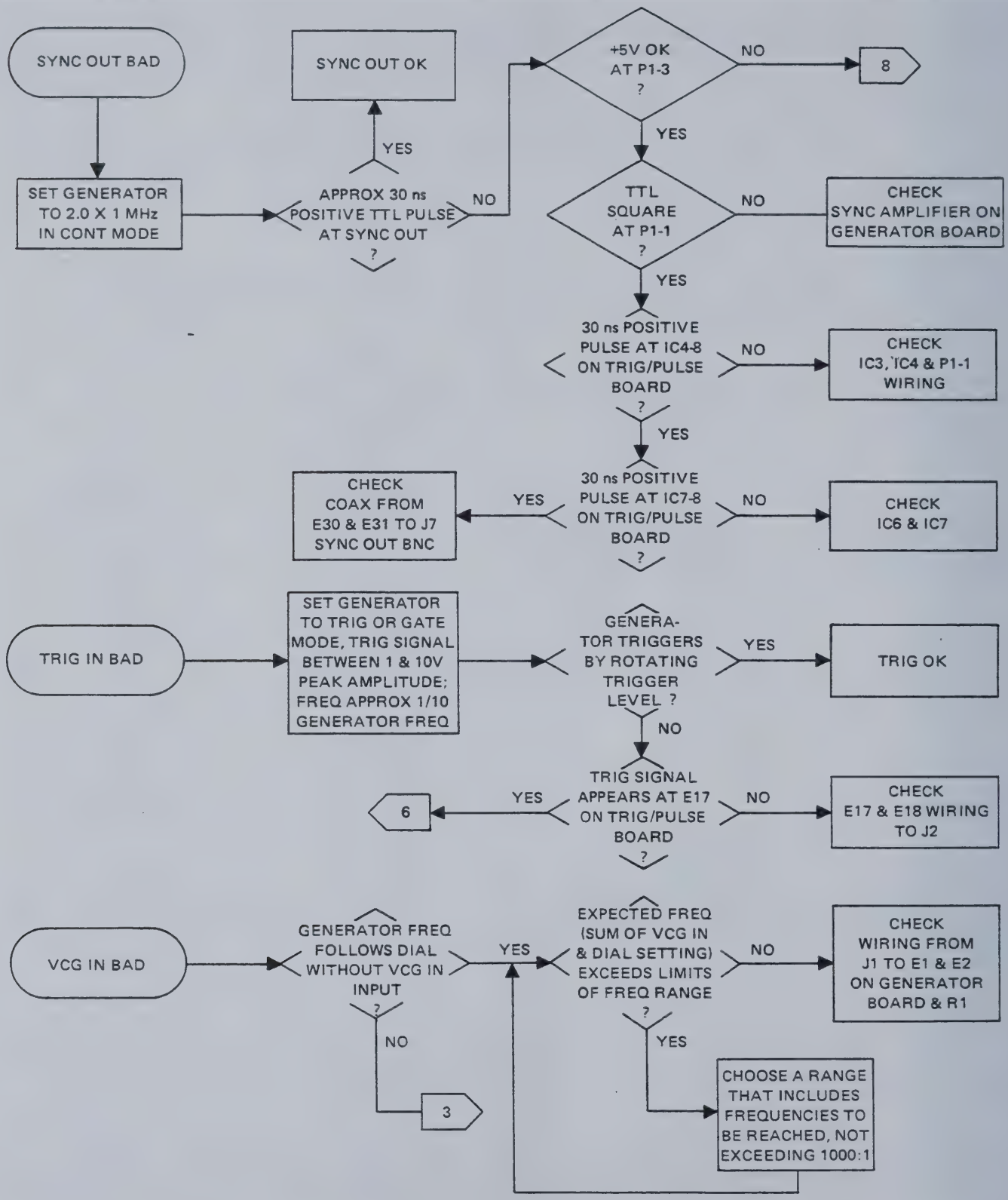


Figure 6-7. Generator Input and Output Checks (Page 1 of 2)

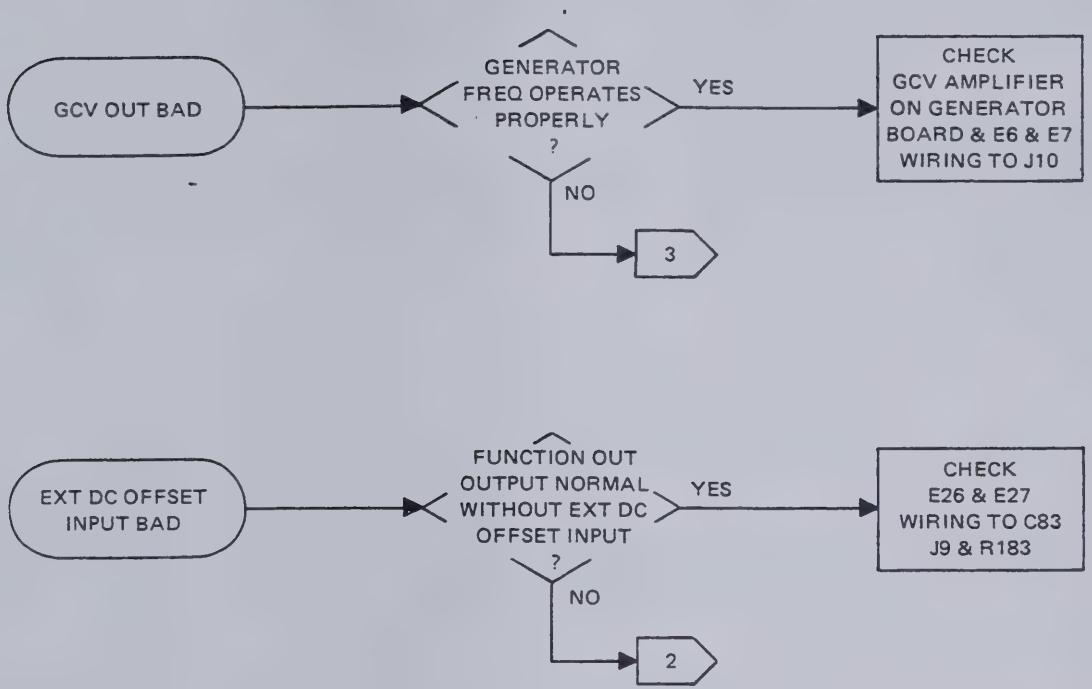


Figure 6-7. Generator Input and Output Checks (Page 2 of 2)

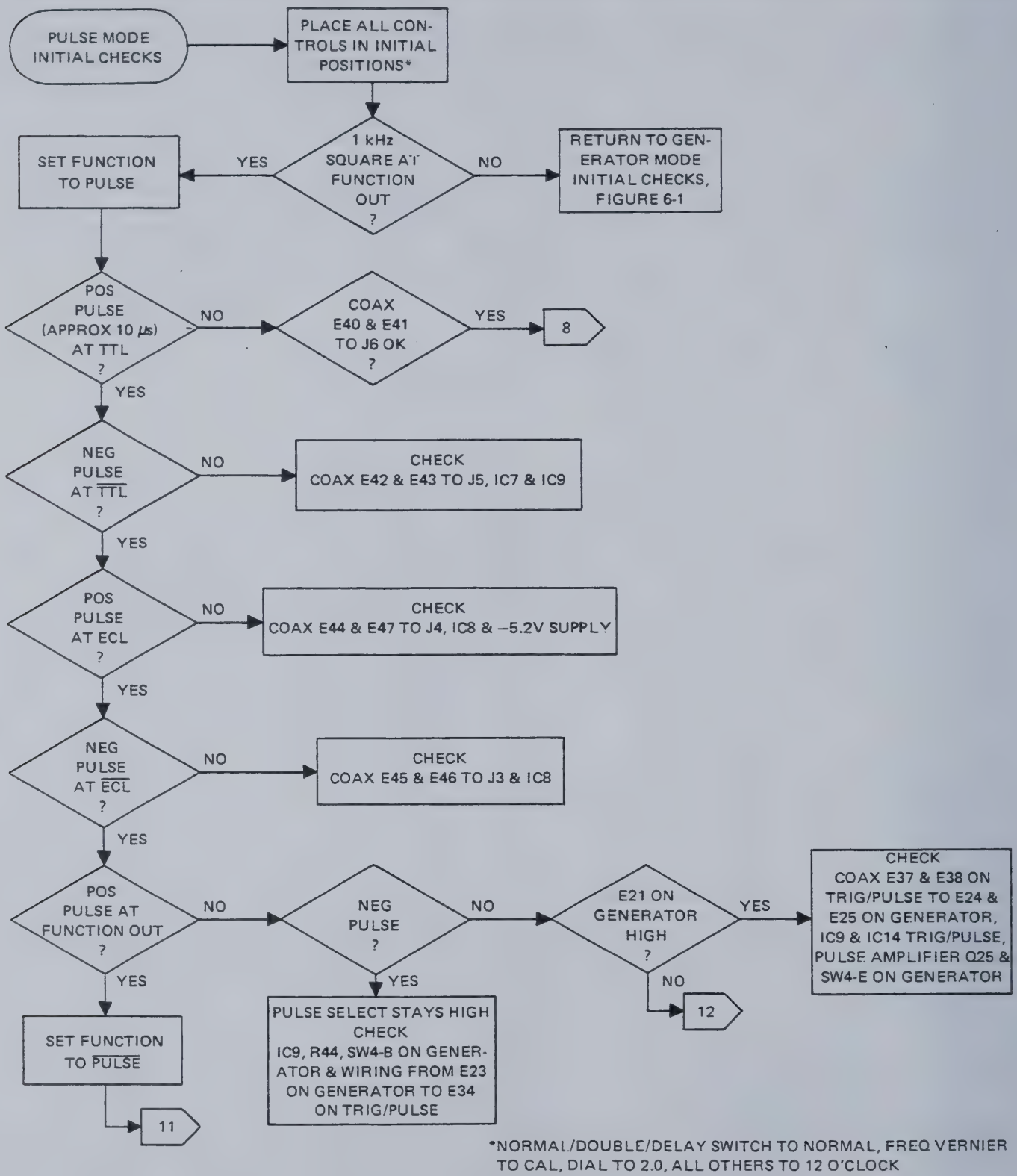


Figure 6-8. Pulse Mode Checks, Trig/Pulse board (Page 1 of 2)

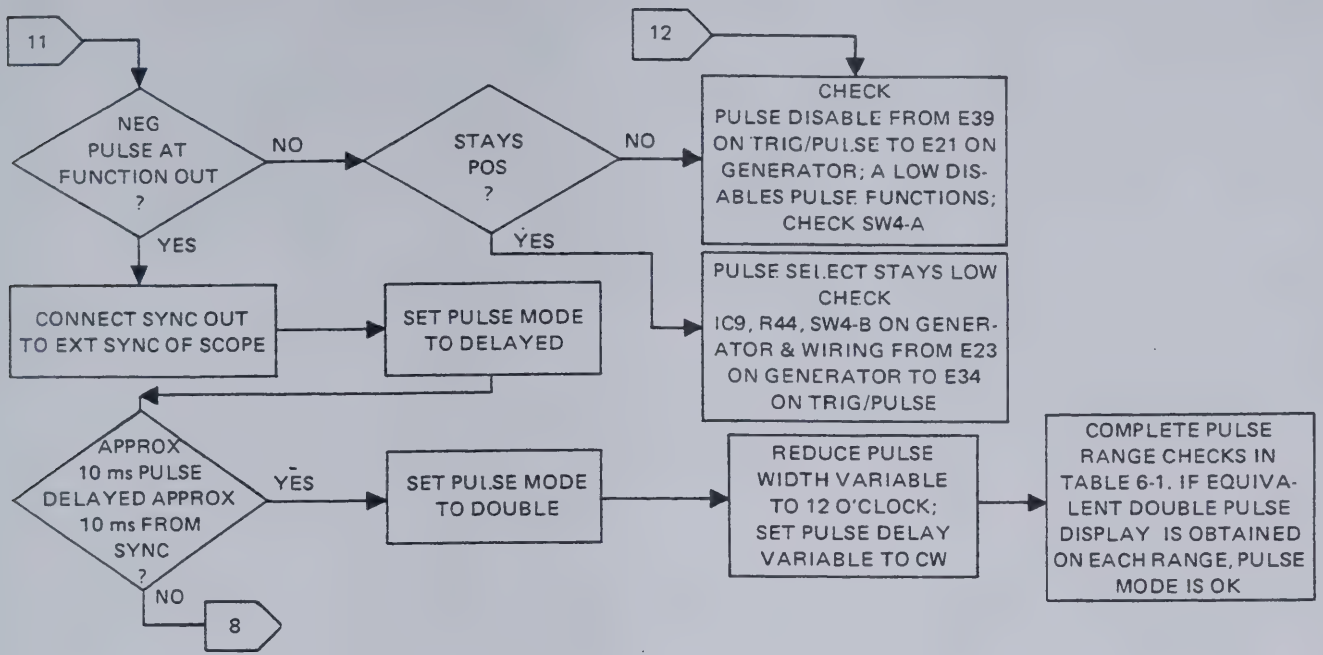


Figure 6-8. Pulse Mode Checks, Trig/Pulse Board (Page 2 of 2)

Table 6-1. Pulse Ranges

Pulse Width	Ranging Components	Pulse Delay	Ranging Components	Pulse Period	Scope Horizontal
OFF	IC5, SW3-A	NA	NA	NA	NA
25 ns ▮ 100 ns	C55, Q19, Q20, SW3-B	50 ns ▮ 100 ns	C40, Q16, Q17, SW2-B	> 0.5 μs	0.05 μs/div
100 ns ▮ 1 μs	C56, CR29, CR30	100 ns ▮ 1 μs	C41, CR19, CR20	> 5 μs	0.5 μs/div
1 μs ▮ 10 μs	C57, CR31, CR32	1 μs ▮ 10 μs	C42, CR21, CR22	> 50 μs	5 μs/div
10 μs ▮ 100 μs	C58, CR33, CR34	10 μs ▮ 100 μs	C43, CR23, CR24	> 0.5 ms	50 μs/div
100 μs ▮ 1 ms	C59, CR35, CR36	100 μs ▮ 1 ms	C44, CR25, CR26	> 5 ms	0.5 ms/div
100 μs ▮ 1 ms	C59, CR35, CR36	1 ms ▮ 10 ms†	C45, CR27, CR28	> 5 ms	0.5 ms/div
⎍	IC4 - IC6, SW3-A	NA	NA	0.5 ms	0.5 ms/div

†Rotate PULSE DELAY VERNIER ccw for proper display

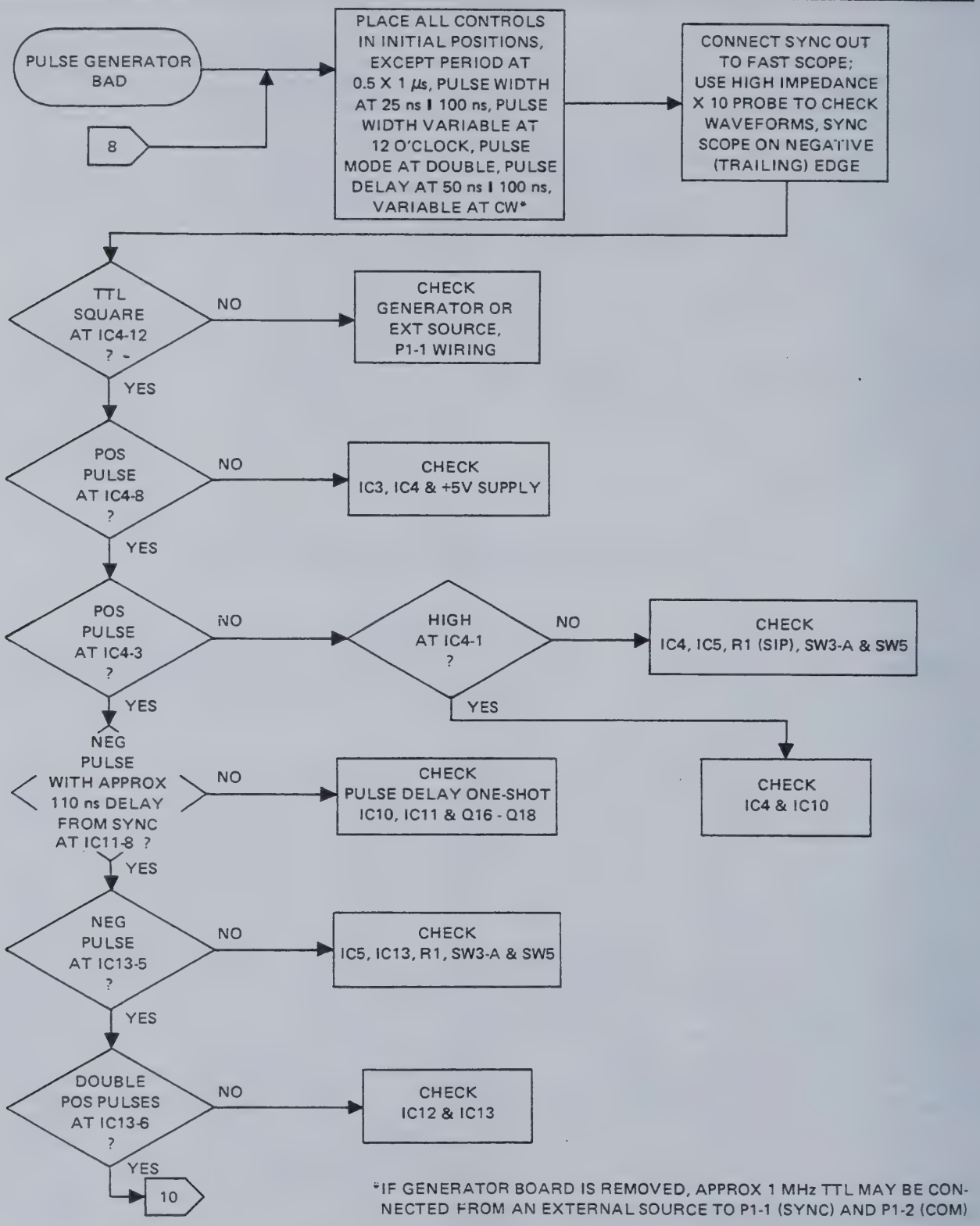


Figure 6-9. Pulse Generator Checks, Trig/Pulse Board (Page 1 of 2)

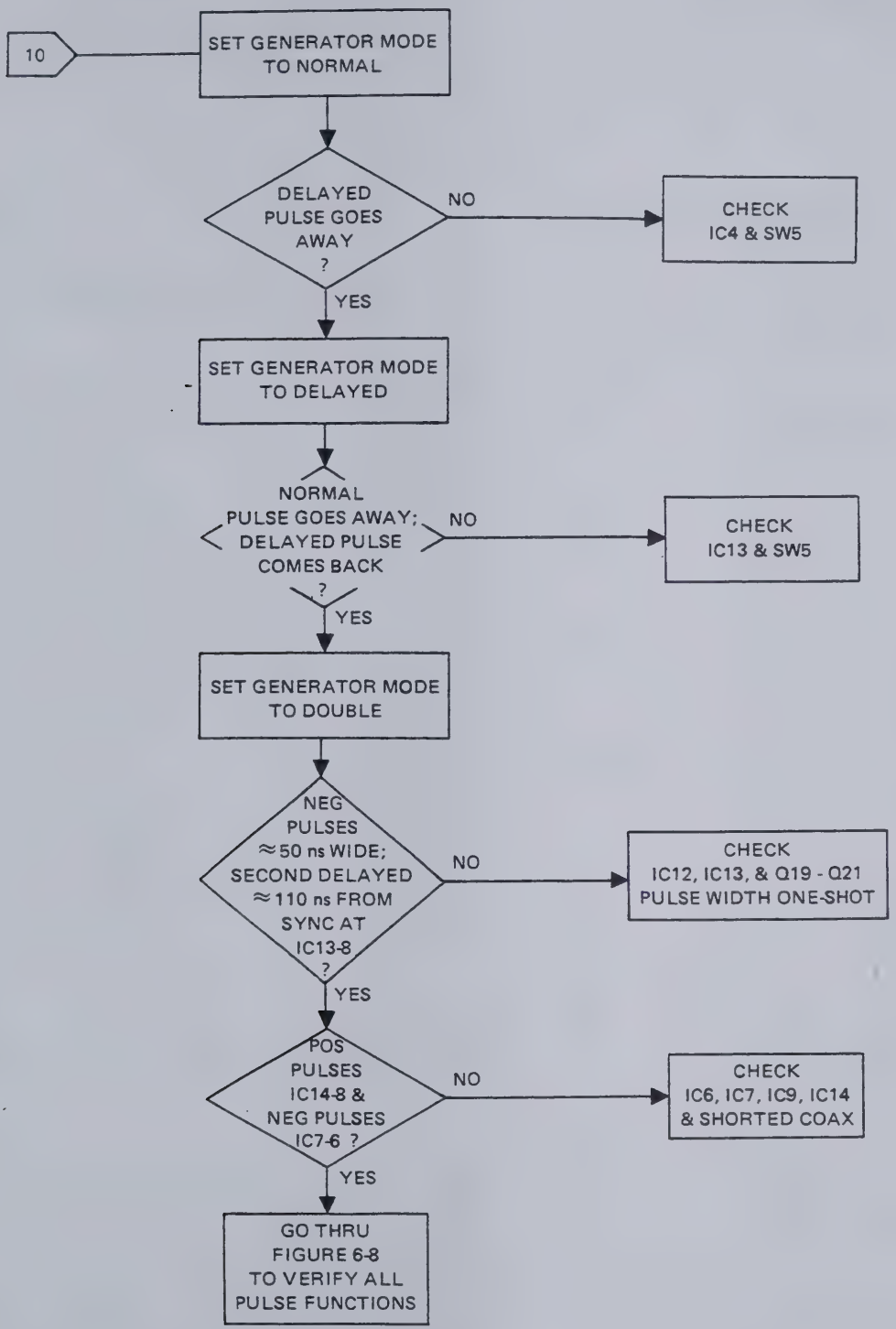


Figure 6-9. Pulse Generator Checks, Trig/Pulse Board (Page 2 of 2)

SECTION 7
PARTS AND SCHEMATICS

7.1 DRAWINGS

The following assembly drawings, schematics and parts lists are in the arrangement shown below.

Drawings	Drawing No.
Instrument Assy & Parts List	0102-00-0101
Instrument Schematic	0004-00-0101
Chassis Assy	0102-00-0575
Chassis Assy Parts List	1101-00-0575
Generator Board Schematic	0103-00-0556
Generator Board Parts Locator	1100-00-0556
Generator Board Assy (sheets 2 & 3)	0101-00-0556
Generator Board Parts List	1100-00-0556
Current Limiter Assy & Parts List	0101-00-1008
Trigger/Pulse Board Schematic	0103-00-0565
Trigger/Pulse Board Parts Locator	1100-00-0565
Trigger/Pulse Board Assy (sheet 2)	0101-00-0565
Trigger/Pulse Board Parts List	1100-00-0565
Rack Mount Assy & Parts List	0102-00-0621
Chassis Assembly	1101-00-3243
Chassis Parts List	1100-00-3243
Generator Board Schematic	1104-00-3245
Generator Board Assembly	1101-00-3245
Generator Board Parts List	1100-00-3245
Option 001 Timer Assy & Parts List	0102-00-0221
Option 003 Timer Assy	0102-00-0442
Option 003 Timer Parts List	1000-00-0442

7.2 ORDERING PARTS

When ordering spare parts, please specify part number, circuit reference, next higher assembly and serial number of the unit.

7.3 ERRATA

Under Wavetek's product improvement program, the latest electronic designs and circuits are incorporated into each Wavetek instrument as quickly as development and testing permit. Because of the time needed to compose and print instruction manuals, it is not always possible to include the most recent changes in the initial printing. Whenever this occurs, errata pages are prepared to summarize the changes made and are inserted inside the shipping carton with the instrument. If no such pages exist, the manual is correct as printed.

7.4 INDEX OF FEDERAL SUPPLY CODES

The following table gives the Federal Supply Code for Manufacturers (FSCM) for manufacturers cited in the parts lists.

MFGR Code	Manufacturer	FSCM
AMP	AMP Inc. P.O. Box 3608 Harrisburg, PA 17105	00779
ANDEV	Analog Devices Inc. 221 Fifth Street Cambridge, MA 02142	24355
ARCO	Arco Electronics Inc. Community Drive Great Neck, NY 11022	84171
BECK	Beckman Instrument Inc. 2500 Harbor Blvd. Fullerton, CA 92634	71738
BOURN	Bourns Inc. 1200 Columbia Ave. Riverside, CA 92507	32997
C&K	C&K Components Inc. 103 Morse Street Newton, MA 02158	09353
CRL	Centralab-Division of Globe Union Milwaukee, WI 53201	71590
CHIM	Chicago Miniature Lamp Works 4433 Ravenwoods Ave. Chicago, IL 60640	71744
CINCH	Cinch Manufacturing Co. 1026 S. Homan Street Chicago, IL 60624	71785
CRL	Centralab-Division of Globe Union P.O. Box 591 Milwaukee, WI 53201	71590

MFGR Code	Manufacturer	FSCM
CORCM	Corman Inc. 2635 N. Kildars Ave. Chicago, IL 60639	05245
CTS	CTS Corporation Elkhart, IN 46514	71450
FAIR	Fairchild Semiconductor Division 313 Frontage Road Mountain View, CA 94043	07263
FERRX	Ferroxcube Corporation of America Mount Marion Road Saugerties, NY 12477	02114
GAVTT	Gavitt Wire & Cable 455 N. Quince Street Escondido, CA 92025	23499
IMB	IMB 15401 S. Carments Rd. Santa Fe Springs, CA 90670	27556
KING	Kings Electronics Co. Inc. 40 Marbledale Road Tuckahoe, NY 11223	91836
LITFU	Littelfuse Inc. 800 E. Northwest Highway Des Plaines, IL 60016	79515
MAL	Mallory Capacitor Co. 3029 E. Washington St. P.O. Box 372 Indianapolis, IN 46206	90201
METRS	Milton Ross Company 511 Second St. Pike Southhampton, PA 18966	07047
MICRO	Micro Semiconductor Corporation 11250 Playa Court Culver City, CA 90230	14552
MOLEX	Molex Products Co. 5224 Katrine Avenue Docuners Grove, IL 60515	27264
MOT	Motorola Inc. Semiconductor Production Div 5005 East McDowell Rd. Phoenix, AZ 85008	04713
PACRD	Packard Electric Division 408 Dana Street N.E. Warren, OH 44481	77060
RCA	RCA Harrison, NJ 07029	86684
ROGAN	Rogan Bros., Inc. 8031 N. Monticello St. Skokie, IL 60076	86797
SEMTEC	Semitech Corporation 652 Mitchell Road Newbury Park, CA 91320	14099
SMITH	Herman H. Smith 812 Snediker Avenue Brooklyn, NY 11207	83330
SPRAG	Sprage Electric Co. North Adams, MA 01247	56289
STKPL	Stackpole Components P.O. Box 14466 Raleigh, NC 27610	29604
THOMN	Thompson Industries Inc. 1029 Plandome Road Manhasset, NY 11030	96881
TI	Texas Instruments North Central Exprwy Dallas, TX 75231	01295
TRIKO	Trico Products Corp. 817 Washington Street Buffalo, NY 14203	75915
TRW	TRW Electronic Components Division 666 Garland Place Des Plaines, IL 60016	18486
UNICP	Unicorp	44729
USECO	USECO Inc. Mt. Vernon, NY	15849
WVTK	Wavetek 9045 Balboa Avenue San Diego, CA 92123	23338

REV	ECN	BY	DATE	APP
—	4053, 4058 (CL III)	A.C.T.	11-21-83	
A	5146	A.T.	2/24/86	A.R.T.

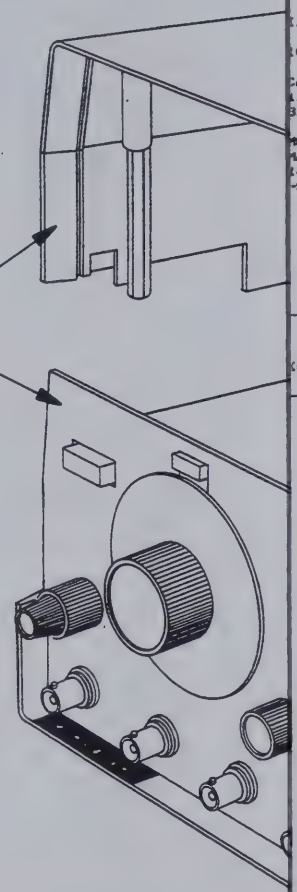
PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
SCHEMATIC, INSTRUMENT	0004-00-0101	WVTK	0004-00-0101	1
FINAL CAL PROCEEDURE	0006-00-0101	WVTK	0006-00-0101	1
ASSY DRWG, MODEL 145	0102-00-0101	WVTK	0102-00-0101	1
ATP FOR MODEL 145 AND OPTIONS	1002-00-0101	WVTK	1002-00-0101	1
PCA, GENERATOR	145-556	WVTK	1100-00-0556	1
STD CHASSIS	145-575	WVTK	1101-00-0575	1
KIT, FINAL ASSY -145	145-1554	WVTK	1206-00-1554	1
I. D. LABEL	801-9090	WVTK	1400-00-9090	1
101-7(F) INSERT	101-7	WVTK	3300-00-0003	1
CARTON 15 1/4X15 1/4X9 3/4, 200#, SINGLE, RSC	101-7A	WVTK	3300-01-0003	1
MODEL 145 INSTRUCTION MANUAL 145-STD, 145-S-620, 145-S-872, 145-S-1021	MANUAL-145	WVTK	1300-00-0101	1

145 20MHZ PULSE GENERATOR

ASSEMBLY NO. 1000-00-0101

REV AA

PAGE 1



STANDARD CHASSIS ASSEMBLY 1101-00-0575

1. FOR PARTS LIST SEE 1000-00-0101

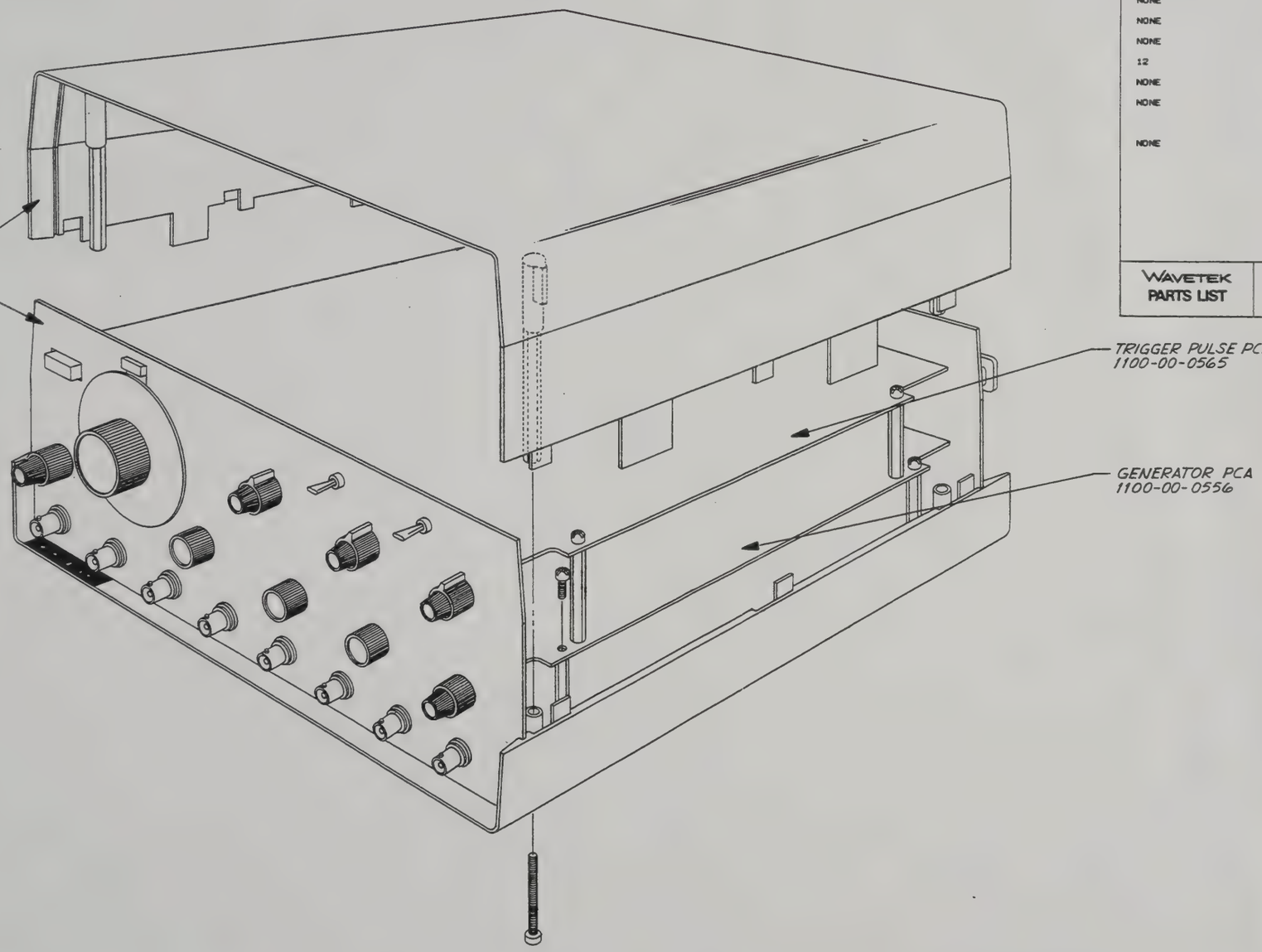
NOTE UNLESS OTHERWISE SPECIFIED

0102-00-0101 A

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 11-8-83	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL —	PROJ ENGR	11/21/83	TITLE ASSEMBLY MODEL 145
	RELEASE APPROV	11/21/83	
FINISH WAVETEK PROCESS —	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1° .XX ±.030		
	DO NOT SCALE DWG	MODEL NO. 145	DWG NO. 0102-00-0101 REV A
	SCALE —	CODE IDENT 23338	SHEET 1 OF 1

MFGR Code	Manufacturer	FSCM
CORCM	Corman Inc. 2635 N. Kildars Ave. Chicago, IL 60639	05245
CTS	CTS Corporation Elkhart, IN 46514	71450
FAIR	Fairchild Semiconductor Division 313 Frontage Road Mountain View, CA 94043	07263
FERRX	Ferroxcube Corporation of America Mount Marion Road Saugerties, NY 12477	02114
GAVTT	Gavitt Wire & Cable 455 N. Quince Street Escondido, CA 92025	23499
IMB	IMB 15401 S. Carments Rd. Santa Fe Springs, CA 90670	27556
KING	Kings Electronics Co. Inc. 40 Marbledale Road Tuckahoe, NY 11223	91836
LITFU	Littelfuse Inc. 800 E. Northwest Highway Des Plaines, IL 60016	79515
MAL	Mallory Capacitor Co. 3029 E. Washington St. P.O. Box 372 Indianapolis, IN 46206	90201
METRS	Milton Ross Company 511 Second St. Pike Southhampton, PA 18966	07047
MICRO	Micro Semiconductor Corporation 11250 Playa Court Culver City, CA 90230	14552
MOLEX	Molex Products Co. 5224 Katrine Avenue Docuners Grove, IL 60515	27264
MOT	Motorola Inc. Semiconductor Production Div 5005 East McDowell Rd. Phoenix, AZ 85008	04713
PACRD	Packard Electric Division 408 Dana Street N.E. Warren, OH 44481	77060
RCA	RCA Harrison, NJ 07029	86684
ROGAN	Rogan Bros., Inc. 8031 N. Monticello St. Skokie, IL 60076	86797
SEMTEC	Semitech Corporation 652 Mitchell Road Newbury Park, CA 91320	14099
SMITH	Herman H. Smith 812 Snediker Avenue Brooklyn, NY 11207	83330
SPRAG	Sprage Electric Co. North Adams, MA 01247	56289
STKPL	Stackpole Components P.O. Box 14466 Raleigh, NC 27610	29604
THOMN	Thompson Industries Inc. 1029 Plandome Road Manhasset, NY 11030	96881
TI	Texas Instruments North Central Exprwy Dallas, TX 75231	01295
TRIKO	Trico Products Corp. 817 Washington Street Buffalo, NY 14203	75915
TRW	TRW Electronic Components Division 666 Garland Place Des Plaines, IL 60016	18486
UNICP	Unicorp	44729
USECO	USECO Inc. Mt. Vernon, NY	15849
WVTK	Wavetek 9045 Balboa Avenue San Diego, CA 92123	23338

REV	ECN	BY	DATE	APP
—	4053, 4058 (CL III)	A.C.T.	11-21-83	
A	5146	A.T.	2/21/86	R.T



REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	SCHEMATIC, INSTRUMENT	0004-00-0101	WVTK	0004-00-0101	1
NONE	FINAL CAL PROCEEDURE	0006-00-0101	WVTK	0006-00-0101	1
NONE	ASSY DRWG, MODEL 145	0102-00-0101	WVTK	0102-00-0101	1
NONE	ATP FOR MODEL 145 AND OPTIONS	1002-00-0101	WVTK	1002-00-0101	1
NONE	PCA, GENERATOR	145-556	WVTK	1100-00-0556	1
NONE	STD CHASSIS	145-575	WVTK	1101-00-0575	1
NONE	KIT, FINAL ASSY -145	145-1554	WVTK	1206-00-1554	1
12	I.D. LABEL	801-9090	WVTK	1400-00-9090	1
NONE	101-7(F) INSERT	101-7	WVTK	3300-00-0003	1
NONE	CARTON 15 1/4X13 1/4X9 3/4, 2000, SINGLE, RSC	101-7A	WVTK	3300-01-0003	1
NONE	MODEL 145 INSTRUCTION MANUAL 145-STD, 145-S-620, 145-S-672, 145-S-1021	MANUAL-145	WVTK	1300-00-0101	1

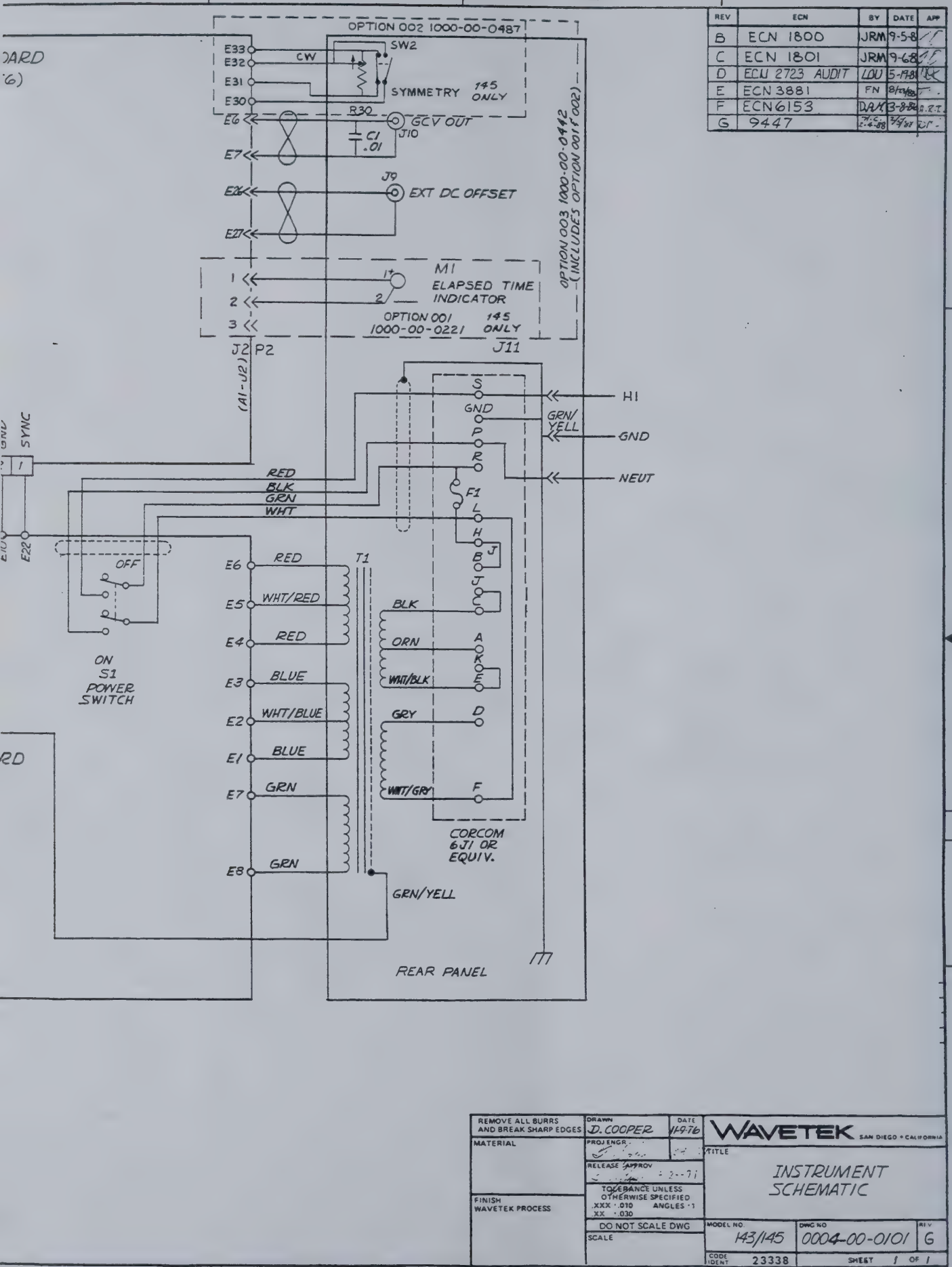
WAVETEK PARTS LIST	TITLE: MODEL 145 20MHZ PULSE FUNCTIONGENERATOR	ASSEMBLY NO. 1000-00-0101 PAGE 1	REV AA

1. FOR PARTS LIST SEE 1000-00-0101

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D.COOPER 11-8-83	WAVETEK SAN DIEGO, CALIFORNIA	
MATERIAL —	ENGINEER 11/21/83	TITLE ASSEMBLY MODEL 145	
FINISH WAVETEK PROCESS —	RELEASE APPROV 11/21/83		
	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1° .XX ±.030		
	DO NOT SCALE DWG	MODEL NO. 145	DWG NO. 0102-00-0101 REV A
	SCALE —	CODE IDENT 23338	SHEET 1 OF 1

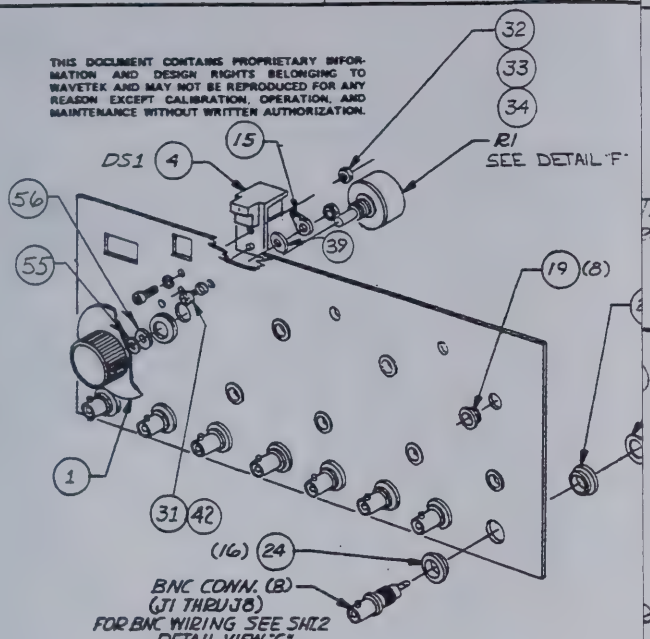
0102-00-0101 A



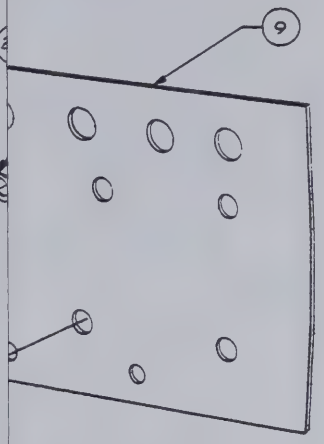
REV	ECN	BY	DATE	APP
B	ECN 1800	JRM	9-5-8	
C	ECN 1801	JRM	9-6-8	
D	ECN 2723 AUDIT	LOU	5-1781	
E	ECN 3881	FN	8/1/80	
F	ECN 6153	DAN	3-8-82	
G	9447		2-4-88	

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 11-9-76	WAVETEK SAN DIEGO • CALIFORNIA
MATERIAL	PROJ ENGR		TITLE INSTRUMENT SCHEMATIC
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1 .XX ±.030		
	DO NOT SCALE DWG		MODEL NO. 143/145
	SCALE		DWG NO 0004-00-0101 REV G
			CODE IDENT 23338 SHEET 1 OF 1

REV	ECN	BY	DATE	APP
B	ECN 1806	JRM	9-38	
C	ECN 1337	JH	1-16-79	
D	ECN 2091, 2124	DC	1-23-80	
E	ECN 2179	LOU	1-23-81	
F	ECN 2559	LOU	12-28-81	
G	ECN 2724	LOU	5-19-82	
H	ECN 2986	DC	12-6-82	
/	ECN 3360 (II)		9/29/83	
/	ECN 3436 (III)		3/23/84	
J	ECN 3881	JP	6/12/85	
/	ECN 4085, 4105 (CL III)		1/20/86	
K	ECN 4938, 6146		2/11/86	
L	ECN 7322		5/2/86	
M	ECN 8087		3/20/87	
N	ECN 9228		10-19-87	
P	ECO # 90-337	MS	5/23/90	

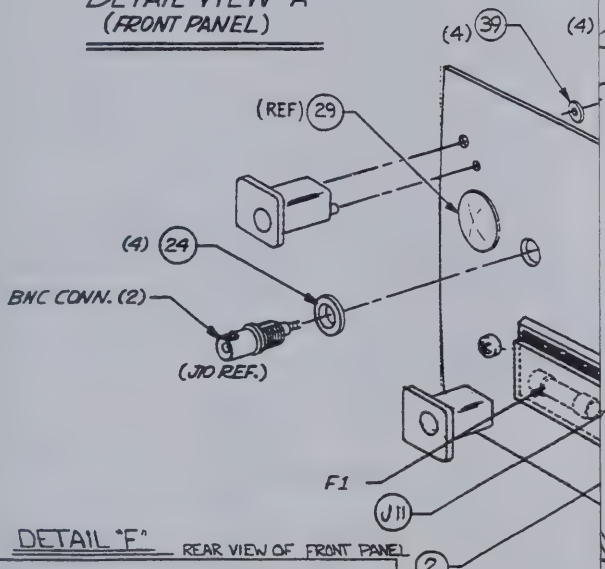


DETAIL VIEW "A"
(FRONT PANEL)

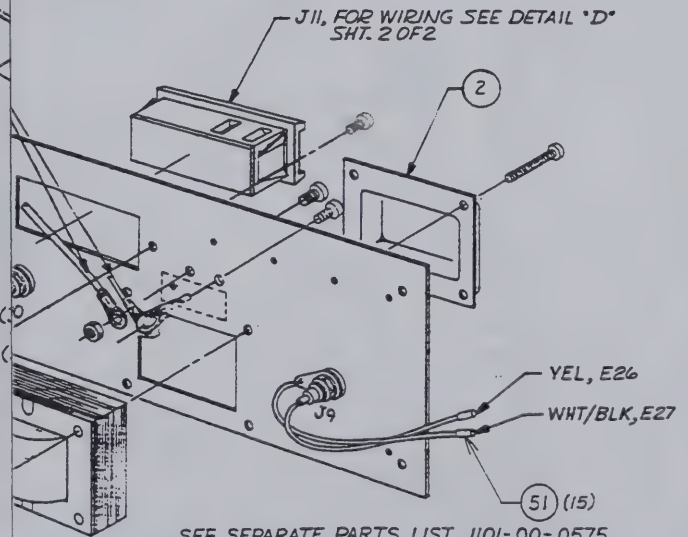


C. BD. ASS'Y. (0102-00-0556 REF.)

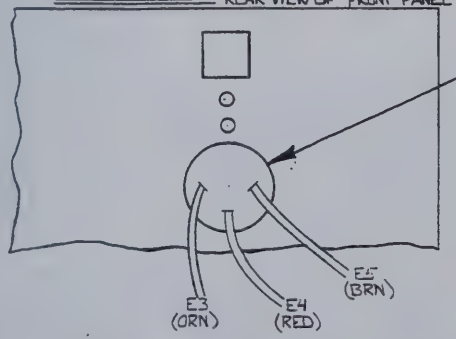
C. BD. ASS'Y. (0102-00-0565 REF.)



DETAIL "B"
REAR PANEL
FOR WIRING SEE DETAIL "D"



DETAIL "F"
REAR VIEW OF FRONT PANEL



5. AFTER INSTALLATION OF FRONT AND REAR FEET, APPLY (1) DROP OF LOCTITE 414 (OR EQUIV.) TO SCREW THREADS (6). ALLOW 1 HR. MIN. TO DRY WITH FEET UP.

4. APPLY INSULATOR TO BOTTOM SIDE AS ARROW INDICATES

5. INSTALL ITEM 28 USING DOW CORNING RTV 3140 TO COVER. THEN APPLY INSULATOR. SEE 4

2. CEMENT ITEM G(2) TO ITEM 5 (TYP. BOTH SIDES)

1. MOUNT SWITCH TO P.C. BOARD PRIOR TO INSTALLING FRONT PANEL USE NO. 2-56 x 1/4 PAN HEAD SCREW WITH NUT (2)

NOTE: UNLESS OTHERWISE SPECIFIED

SEE SEPARATE PARTS LIST 1101-00-0575

REMOVE ALL BURRS AND BREAK SHARP EDGES
MATERIAL
FINISH
WAVETEK PROCESS

DRAWN: D. COOPER 1-17-77
PROJENGR
RELEASE APPROV
TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1° XX ±.030
DO NOT SCALE DWG
SCALE

WAVETEK SAN DIEGO, CALIFORNIA

TITLE
ASSEMBLY
STANDARD CHASSIS

MODEL NO 145
DWG NO 0102-00-0575
REV P
CODE IDENT 23338
SHEET 1 OF 2

0102-00-0575 P

REV	ECN	BY	DATE	APP
B	ECN 1800	JRM	9-5-8	
C	ECN 1801	JRM	9-6-8	
D	ECN 2723 AUDIT	LOU	5-19-88	
E	ECN 3881	FN	8/14/90	
F	ECN 6153	DAM	3-8-94	
G	9447		2-6-98	

FRONT PANEL

R1 DIAL 5K — CW

R5

J1 VCG IN

J8 FUNCTION OUT

DS1

J2 TRIG IN

J7 SYNC OUT

E3 +15V
E4 DIAL
E5
E1
E2
E28
E29
E38
E12
E13
E17
E18
E30
E31

GRN/YEL 18 GA

GENERATOR BOARD
(1700-00-0556)

A1

E23 PULSE SELECT
E21 PULSE DISABLE
E25 PULSE
E24
(A1-J1)

P1: 9 +24V, 8 -24V, 7 -15V, 6 +15V, 5 STOP/START, 4 TRIG LOGIC, 3 +5V, 2 GND, 1 SYNC

(A2-P2)
E37 E38 E39 E31
(145 ONLY)
E14 E15 E11 E9 E48 E19 E16 E10 E22

TRIG/PULSE BOARD
(1700-00-0565)

A2

J6 TTL — E40, E41
J5 TTL — E42, E43
J4 ECL — E44, E47
J3 ECL — E45, E46
145 ONLY

OPTION 002 1000-00-0487

E33 CW
E32
E31
E30
SW2
SYMMETRY 145 ONLY
E6
R30
GCV OUT
J10
C1 .01
E7
J9
EXT DC OFFSET
E36
E37

OPTION 003 1000-00-0442
(INCLUDES OPTION 001 & 002)

M1 ELAPSED TIME INDICATOR
OPTION 001 1000-00-0221 145 ONLY
1
2
3
J11
J2 P2
(A1-U2)

OFF
ON S1 POWER SWITCH

E6 RED
E5 WHT/RED
E4 RED
E3 BLUE
E2 WHT/BLUE
E1 BLUE
E7 GRN
E8 GRN

T1

BLK
ORN
WHT/BLK
GRY
WHT/GRY

A K E D F

CORCOM 6J1 OR EQUIV.

GRN/YELL

REAR PANEL

RED
BLK
GRN
WHT

S HI
GND GRN/YELL
P GND
R NEUT

F1
L
H
B J
J
A K E D F

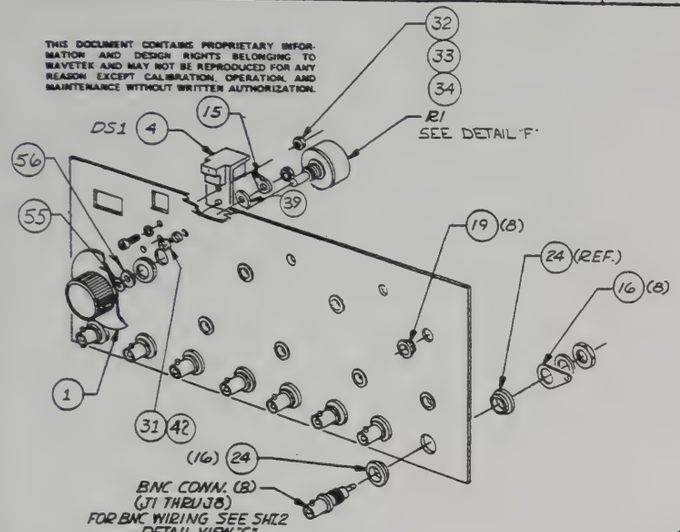
3/16A 220-240VAC
1. F1 - 3/8A 100-120VAC

NOTE UNLESS OTHERWISE SPECIFIED

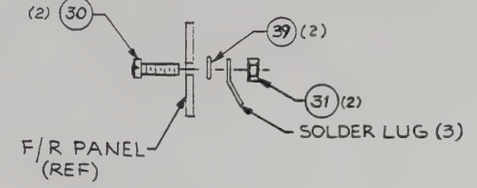
REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 1996	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	PROJ ENGR		TITLE: INSTRUMENT SCHEMATIC
FINISH WAVETEK PROCESS	RELEASE APPROV 2-27-97		
	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1 .XX ±.030		
	DO NOT SCALE DWG	MODEL NO 143/145	DWG NO 0004-00-0101 REV G
	SCALE	CODE IDENT 23338	SHEET 1 OF 1

NOTES:
ALL CONNECTIONS TO BE MECHANICALLY SECURE PRIOR TO SOLDERING GROUND WIRES.

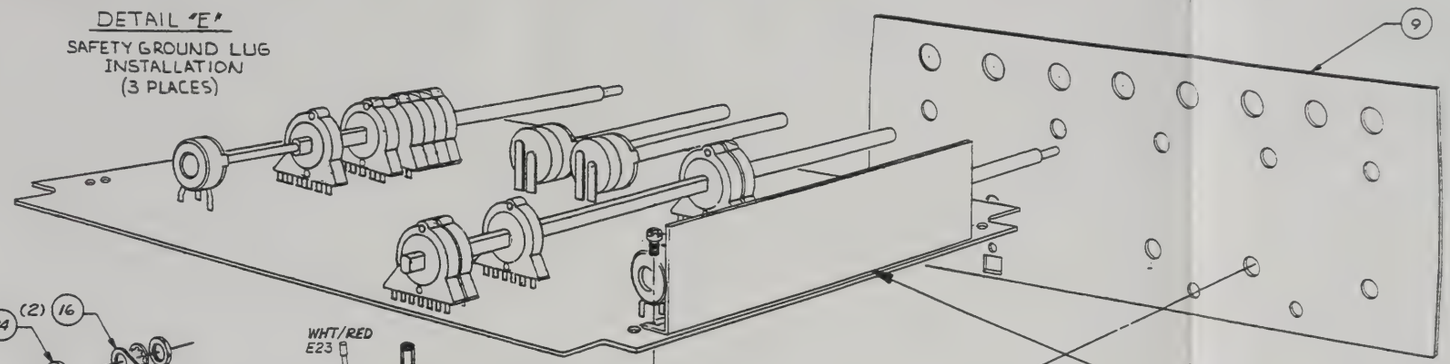
REV	ECN	BY	DATE	APP
B	ECN 1806	JRM	9-28	
C	-1837	LH	1-16-79	
D	ECN 2091, 2124	DC	1-23-80	
E	-2179	LOU	11-23-81	
F	2559	LOU	12-28-81	
G	2724	LOU	5-19-82	
H	2986	DC	12-6-82	
/	3360 (II)		9/29/83	
/	3435 (II)		12/6/83	
J	ECN 3881	JP	6/4/85	
/	4085, 4105 (CL III)		12/6/85	
K	ECN 4938, 6146		2/19/86	
L	7322		5/2/86	
M	8087		3/22/87	
N	9228		10-19-87	
P	ECO # 90-337	MS	3-23-90	

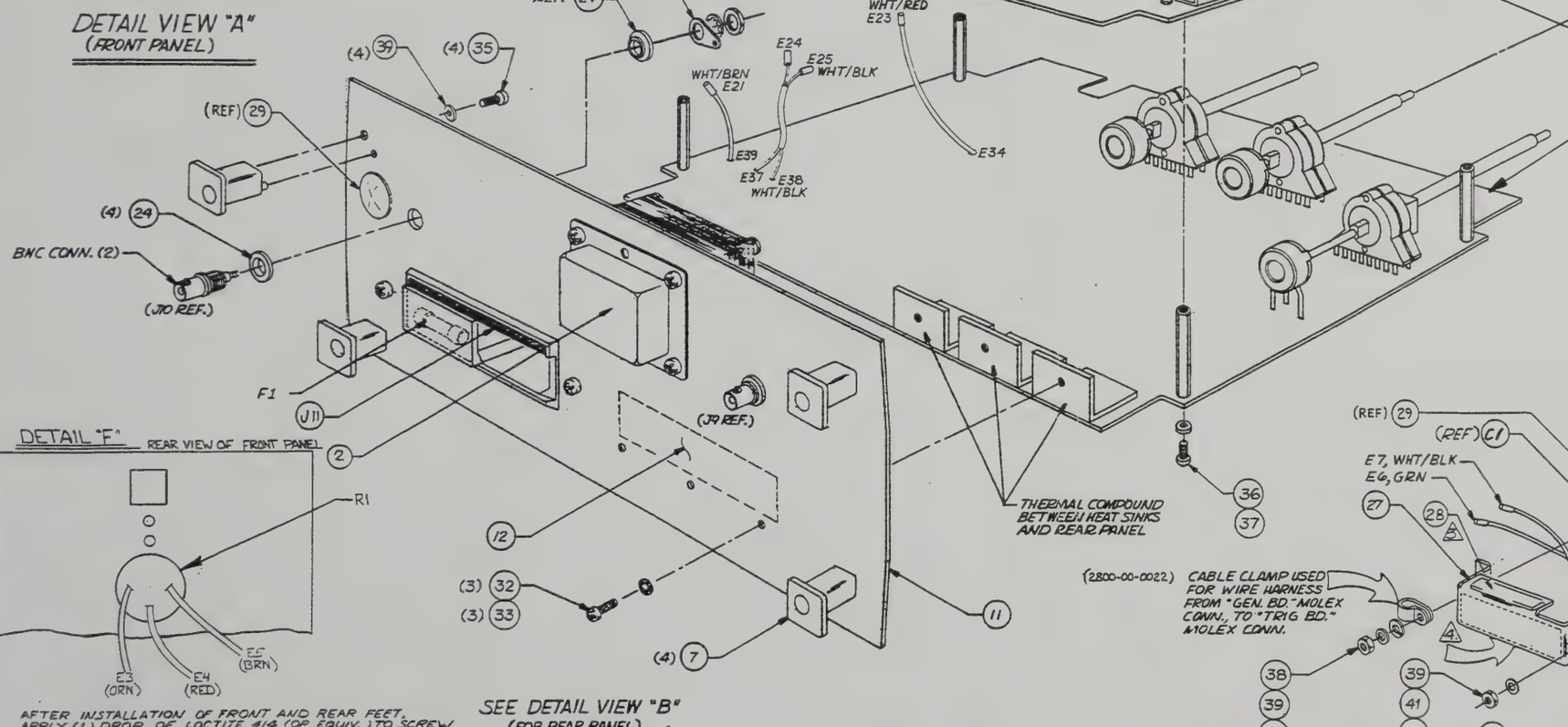


DETAIL VIEW "A"
(FRONT PANEL)



DETAIL "E"
SAFETY GROUND LUG INSTALLATION
(3 PLACES)

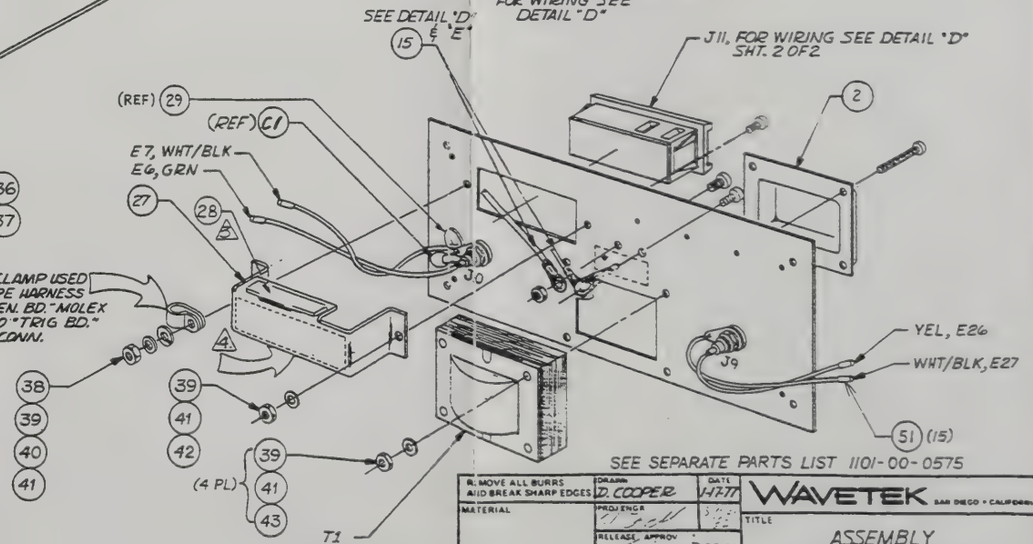




DETAIL "F" REAR VIEW OF FRONT PANEL

SEE DETAIL VIEW "B"
(FOR REAR PANEL)

DETAIL VIEW "B"
REAR PANEL
FOR WIRING SEE DETAIL "D"



SEE SEPARATE PARTS LIST 1101-00-0575

5. AFTER INSTALLATION OF FRONT AND REAR FEET, APPLY (1) DROP OF LOCTITE 414 (OR EQUIV.) TO SCREW THREADS (6). ALLOW 1 HR. MIN. TO DRY WITH FEET UP.

4 APPLY INSULATOR TO BOTTOM SIDE AS ARROW INDICATES

3 INSTALL ITEM 28 USING DOW CORNING RTV 3140 TO COVER. THEN APPLY INSULATOR. SEE 4

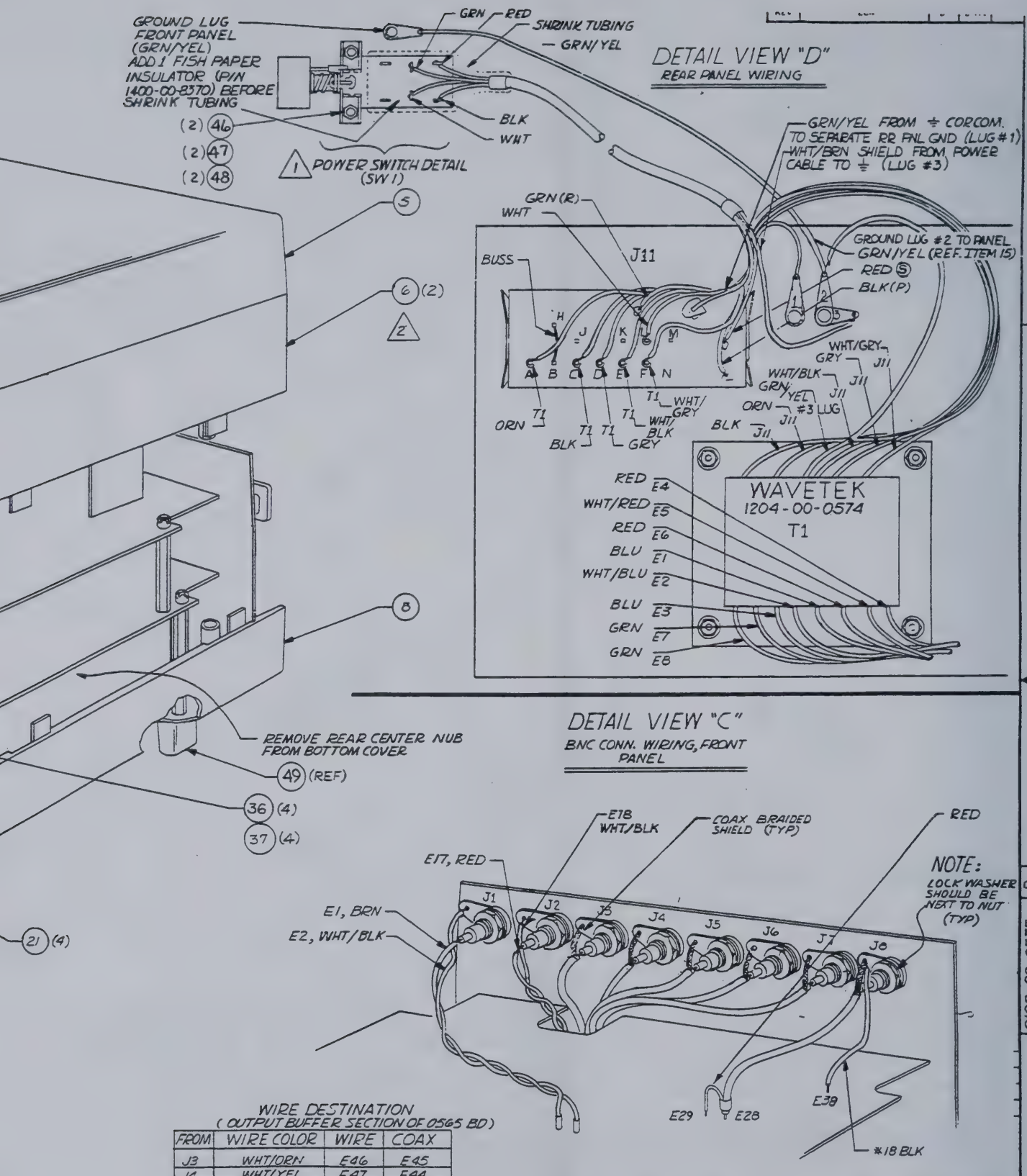
2 CEMENT ITEM G (2) TO ITEM 5 (TYP. BOTH SIDES)

1 MOUNT SWITCH TO P.C. BOARD PRIOR TO INSTALLING FRONT PANEL USE NO. 2-56 x 1/4 PAN HEAD SCREW WITH NUT (2)

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 1-17-77	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	PROJ ENGR		TITLE ASSEMBLY STANDARD CHASSIS
FINISH WAVETEK PROCESS	RELEASE APPROV		
	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ± .010 ANGLES ± 1° .XX ± .030		
	DO NOT SCALE DWG	MODEL NO 145	DWG NO 0102-00-0575 REV P
	SCALE	CODE IDENT 23338	SHEET 1 OF 2

0102-00-0575 P



WIRE DESTINATION
(OUTPUT BUFFER SECTION OF 0565 BD)

FROM	WIRE COLOR	WIRE	COAX
J3	WHT/ORN	E46	E45
J4	WHT/YEL	E47	E44
J5	WHT/GRN	E43	E42
J6	WHT/BLU	E41	E40
J7	WHT/VIO	E21	E30

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 1-18-77	WAVETEK SAN DIEGO • CALIFORNIA
MATERIAL	PROJENGR L. Fish	5/20/93	TITLE ASSEMBLY STANDARD CHASSIS
FINISH WAVETEK PROCESS	RELEASE APPROV 3-23-77		
	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 XX ± .030 ANGLES ± 1		
	DO NOT SCALE DWG	MODEL NO 145	DWG NO 0102-00-0575 REV P
	SCALE	CODE IDENT NO 23338	SHEET 2 OF 2

0102-00-0575 P

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	T DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG, CHASSIS	0102-00-0575	Y DRWG, CHASSIS	0102-00-0575	WVTK	0102-00-0575	1
NONE	PCA, TRIGGER/PULSE	145-565	NSFORMER	143-574	WVTK	1204-00-0574	1
NONE	ASSY, FRONT PANEL -145	145-1555	Y, CONDUCTOR CABLE -145	143-145-1959	WVTK	1207-00-1959	1
NONE	ASSY, REAR PANEL -145	145-1556	BELL	1400-00-0174	WVTK	1400-00-0174	1
27	SHIELD, PWR	801-6210	T	180-302	WVTK	1400-00-5020	4
NONE	INSULATOR PLATE REF: 3200-03-0004	145-3931	EL, REAR	145-6760	WVTK	1400-00-6760	1
			ULATOR, PWR SWITCH : 1600-99-0001	801-6370	WVTK	1400-00-8370	1
18	COAX KNOB SET	RB-67-1-SB+O-M-9	CER MON .01MF , AXIAL	CAC02Z5U103Z100A	CORNG	1500-01-0310	1
NONE	CLAMP, CABLE	E-4	N BNC	KC-7946	KING	2100-01-0002	2
33	WASHER, LOCK REG, S/S #4	MS 35338-135	N, RECEPTACLE	6VJ1	CDRCM	2100-03-0026	1
39	WASHER, LOCK, REG S/S #6	MS 35338-136	DER LUG	1497	SMITH	2100-04-0012	2
			DER LUG	11A144	ZIER	2100-04-0023	3
40	WASHER, FLAT, SS, #6 LARGE OUTLINE	AN 960C6	E, 1/2A, 250V	313.500	LITFU	2400-05-0010	1
46	SCREW PLPS PAN M/S 18-8 S/S 2-56X1/4	SCREW PH 2-56X1/4S/	HER, SHOULDER, WHITE	2668	SMITH	2800-27-0004	4
			G BUTTON	2663(BLACK)	HEYCO	2800-35-0004	1

WAVETEK PARTS LIST	TITLE STD CHASSIS	ASSEMBLY AR PANEL -145	ASSEMBLY NO. 1206-00-1556	REV C
			PAGE 1	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	T DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
32	SCREW PLPS PAN M/S 18-8 S/S 4-40X3/8	MS 51957-15	HER, LOCK, REG S/S	MS 35338-136	CMRCL	2800-45-6000	4
42	SCREW PLPS PAN M/S 18-8 S/S 6-32X3/8	MS 51957-28	HER, FLAT, SS, #6 GE OUTLINE	AN 960C6	CMRCL	2800-46-6001	4
38	SCREW, MACH, PH, PHLPS, 6-32 X 1/2, SS 18-8 SS, #6-32X1/2	MS 51957-30	PH, PHLPS, 6-32 X /2, SS 18-8 SS, -32X1.5	MS 51957-36	CMRCL	2800-48-6124	4
47	NUT, MACHINE SCREW, 18-8 SS, #2-56	2-56 M/S NUT 18-8 S	REW, CAP, SOCKET 6-32X3/8	MS 16995-17	CMRCL	2800-49-6106	2
41	NUT, MACHINE SCREW, 18-8 SS, #6-32	MS 35649-64	, MACHINE SCREW, -8 SS, #6-32	MS 35649-64	CMRCL	2800-50-6101	4
			, LOCKING, MS, 32, SS 18-8 SS, -32	MS 20364-632	CMRCL	2800-50-6102	2
			REW, SELF-TAP, PH, PHL #6 X 3/8, SS TYPE B6X3/8	MS24626-19	CMRCL	2800-59-6006	4
			ITCH ASSY PB	1XTA0003TA100B-W/NE152	ECG	5102-00-0008	1
			R CORD	17251	BELDN	6001-80-0005	1

WAVETEK PARTS LIST	TITLE STD CHASSIS	ASSEMBLY EAR PANEL -145	ASSEMBLY NO. 1206-00-1556	REV C
			PAGE 2	

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS D BREAK SHARP EDGES
SMALL
ISH ETEK PROCESS
NOT SCALE DRAWING

	DRAWN	DATE
	CHECKED	
	PROJ. ENGR.	
	RELEASE APPROV.	

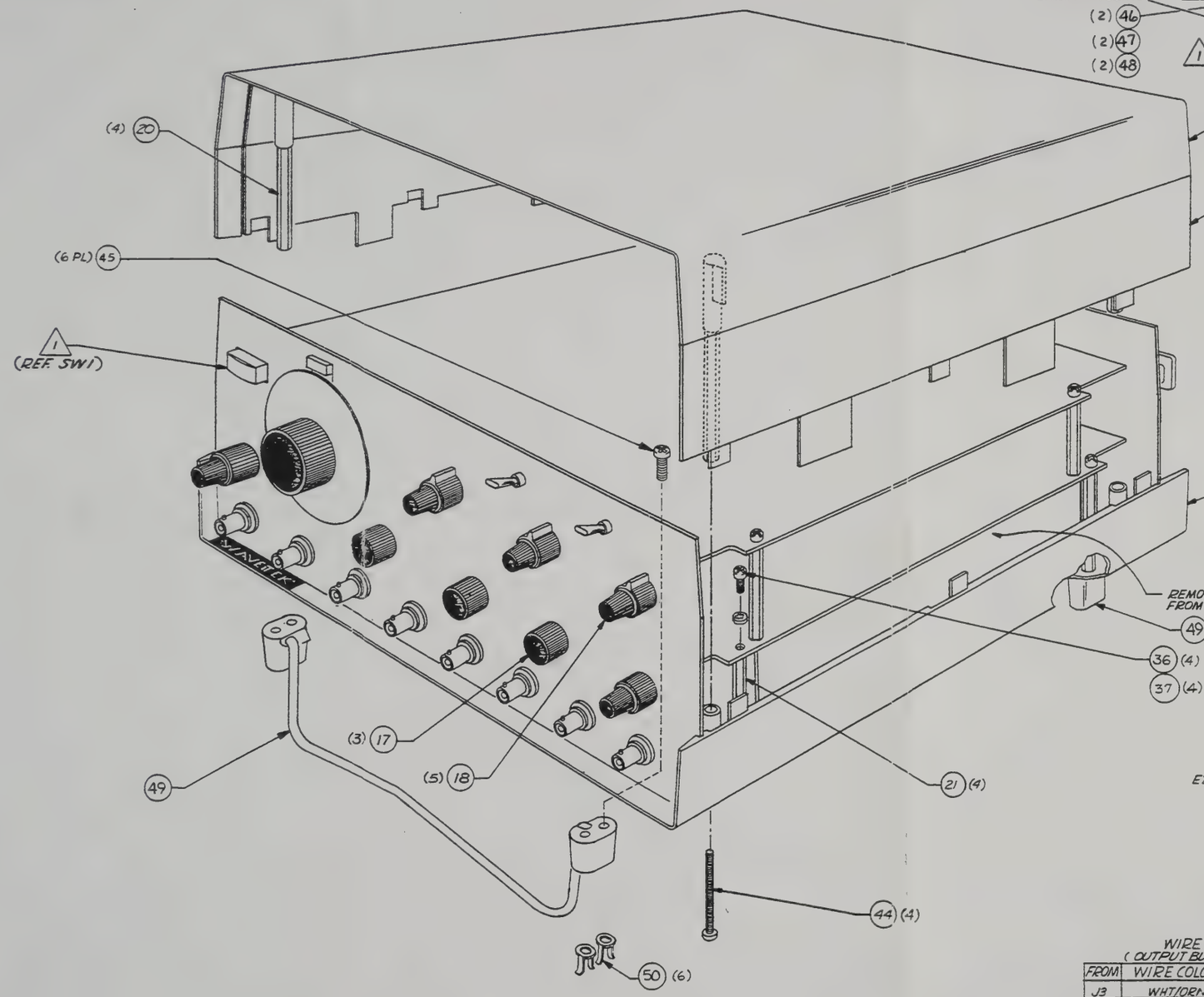
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

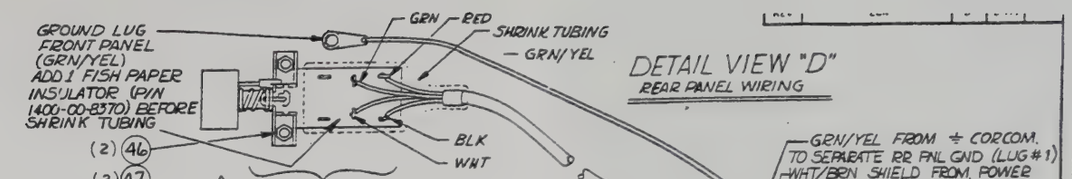
WAVETEK SAN DIEGO, CALIFORNIA

TITLE
PARTS LIST
STD CHASSIS

SIZE	FSCM NO.	DWG. NO.	REV
D	23338	1101-00-0575	P

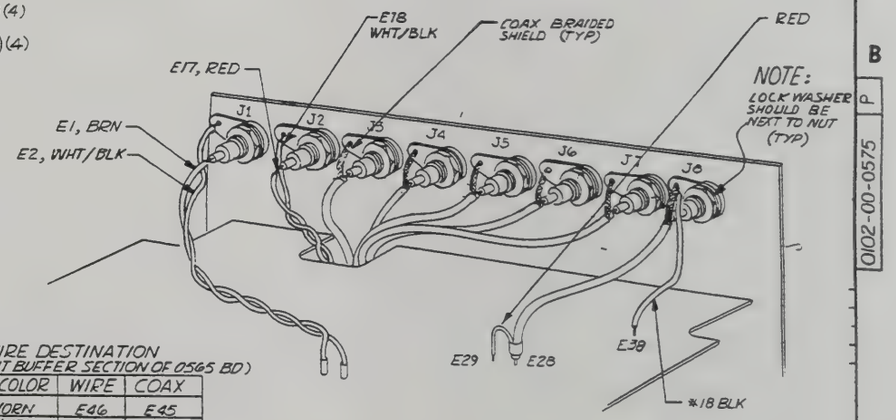
SCALE | MODEL 145 | SHEET 1 OF 1





DETAIL VIEW "D"
REAR PANEL WIRING

DETAIL VIEW "C"
BNC CONN. WIRING, FRONT PANEL



WIRE DESTINATION
(OUTPUT BUFFER SECTION OF 0565 BD)

FROM	WIRE COLOR	WIRE	COAX
J3	WHT/ORN	E46	E45
J4	WHT/YEL	E47	E44
J5	WHT/GRN	E43	E42
J6	WHT/BLU	E41	E40
J7	WHT/VIO	E31	E30

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES
MATERIAL
FINISH WAVETEK PROCESS
DRAWN D. COOPER DATE 1-18-77
PROJENGR 3/20/03
RELEASE APPROV 3-23-77
TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030
DO NOT SCALE DWG
SCALE

WAVETEK SAN DIEGO, CALIFORNIA

TITLE
ASSEMBLY STANDARD CHASSIS

MODEL NO 145
DWG NO 0102-00-0575
REV P
CODE IDENT NO 23338
SHEET 2 OF 2

0102-00-0575 P

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG, CHASSIS	0102-00-0575	WVTK	0102-00-0575	1
NONE	PCA, TRIGGER/PULSE	145-565	WVTK	1100-00-0565	1
NONE	ASSY, FRONT PANEL -145	145-1555	WVTK	1206-00-1555	1
NONE	ASSY, REAR PANEL -145	145-1556	WVTK	1206-00-1556	1
27	SHIELD, PWR	801-6210	WVTK	1400-00-6210	1
NONE	INSULATOR PLATE REF: 3200-03-0004	145-3931	WVTK	1400-01-3931	1
18	COAX KNOB SET	RB-67-1-SB40-M-9	ROGAN	2400-01-0009	3
NONE	CLAMP, CABLE	E-4	RICH	2800-00-0022	1
48	WASHER, LOCK, SPLIT S/S #2	MS35338-134	MS	2800-45-2000	2
33	WASHER, LOCK REG, S/S #4	MS 35338-135	CMRCL	2800-45-4000	3
39	WASHER, LOCK, REG S/S #6	MS 35338-136	CMRCL	2800-45-6000	9
40	WASHER, FLAT, SS, #6 LARGE OUTLINE	AN 960C6	CMRCL	2800-46-6001	1
46	SCREW PLPS PAN M/S 18-8 S/S 2-56X1/4	SCREW PH 2-56X1/4S/S	CMRCL	2800-48-2104	2

WAVETEK PARTS LIST | TITLE STD CHASSIS | ASSEMBLY NO. 1101-00-0575 | REV P | PAGE 1

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG, CHASSIS	0102-00-0575	WVTK	0102-00-0575	1
NONE	DIAL ASSY-145	1201-00-1885	WVTK	1201-00-1885	1
4	INDICATOR, DIAL	180-303	WVTK	1400-00-4970	1
9	PANEL, FRONT	145-6770	WVTK	1400-00-6770	1
J1 J2 J3 J4 J5 J6 J7 J8	CONN BNC	KC-7946	KING	2100-01-0002	8
16	SOLDER LUG	1497	SMITH	2100-04-0012	8
15	SOLDER LUG	11A144	ZIER	2100-04-0025	1
19	BUSHING NYLINER	4L2FF	THOMN	2800-01-0002	8
24	WASHER, SHOULDER, WHITE	2668	SMITH	2800-27-0004	16
55	WASHER, WAVE SPRING	5804-133-1	SEA	2800-28-0021	1
56	WASHER, FLAT, BRASS, .025 ID, .400 OD	5714-62-32	SESTM	2800-28-0022	1
33	WASHER, LOCK REG, S/S #4	MS 35338-135	CMRCL	2800-45-4000	1
32	SCREW PLPS PAN M/S 18-8 S/S 4-40X3/8	MS 51957-15	CMRCL	2800-48-4106	1
42	SCREW PLPS PAN M/S 18-8 S/S 6-32X3/8	MS 51957-28	CMRCL	2800-48-6106	1
34	NUT, MACHINE SCREW,	NAS 671C4	CMRCL	2800-50-4100	1

WAVETEK PARTS LIST | TITLE ASSY, FRONT PANEL -145 | ASSEMBLY NO. 1206-00-1555 | REV B | PAGE 1

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG, CHASSIS	0102-00-0575	WVTK	0102-00-0575	1
T1	TRANSFORMER	143-574	WVTK	1204-00-0574	1
NONE	ASSY, CONDUCTOR CABLE 143-145	143-145-1959	WVTK	1207-00-1959	1
2	END BELL	1400-00-0174	WVTK	1400-00-0174	1
7	POST	180-302	WVTK	1400-00-3020	4
11	PANEL, REAR	145-6760	WVTK	1400-00-6760	1
NONE	INSULATOR, PWR SWITCH REF: 1600-99-0001	801-6370	WVTK	1400-00-6370	1
C1	CAP CER MON .01MF 50V, AXIAL	CAC02Z5U103Z100A	CORNG	1300-01-0310	1
J10 J9	CONN BNC	KC-7946	KING	2100-01-0002	2
J11	CONN, RECEPTACLE	6VJ1	CDRCM	2100-03-0026	1
16A	SOLDER LUG	1497	SMITH	2100-04-0012	2
15A	SOLDER LUG	11A144	ZIER	2100-04-0025	3
F1	FUSE, 1/2A, 250V	313.500	LITFU	2400-05-0010	1
24	WASHER, SHOULDER, WHITE	2668	SMITH	2800-27-0004	4
29	PLUG BUTTON	2663(BLACK)	HEYCO	2800-35-0004	1

WAVETEK PARTS LIST | TITLE ASSY, REAR PANEL -145 | ASSEMBLY NO. 1206-00-1556 | REV C | PAGE 1

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
32	SCREW PLPS PAN M/S 18-8 S/S 4-40X3/8	MS 51957-15	CMRCL	2800-48-4106	3
42	SCREW PLPS PAN M/S 18-8 S/S 6-32X3/8	MS 51957-28	CMRCL	2800-48-6106	1
38	SCREW, MACH, PH, PHLPS, 6-32 X 1/2, SS 18-8 SS, #6-32X1/2	MS 51957-30	CMRCL	2800-48-6108	1
47	NUT, MACHINE SCREW, 18-8 SS, #2-56	2-56 M/S NUT 18-8 S/S	CMRCL	2800-50-2100	2
41	NUT, MACHINE SCREW, 18-8 SS, #6-32	MS 35649-64	CMRCL	2800-50-6101	2

WAVETEK PARTS LIST | TITLE STD CHASSIS | ASSEMBLY NO. 1101-00-0575 | REV P | PAGE 2

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
	18-8 SS, #4-40				
31	NUT, LOCKING, MS, 6-32, SS 18-8 SS, #6-32	MS 20364-632	CMRCL	2800-50-6102	1
R1	POT, DIAL, 5K+/-5%, PRECISION, LINEAR	ECONOPOT MKIII 78PF-14	NEI	4600-05-0212	1

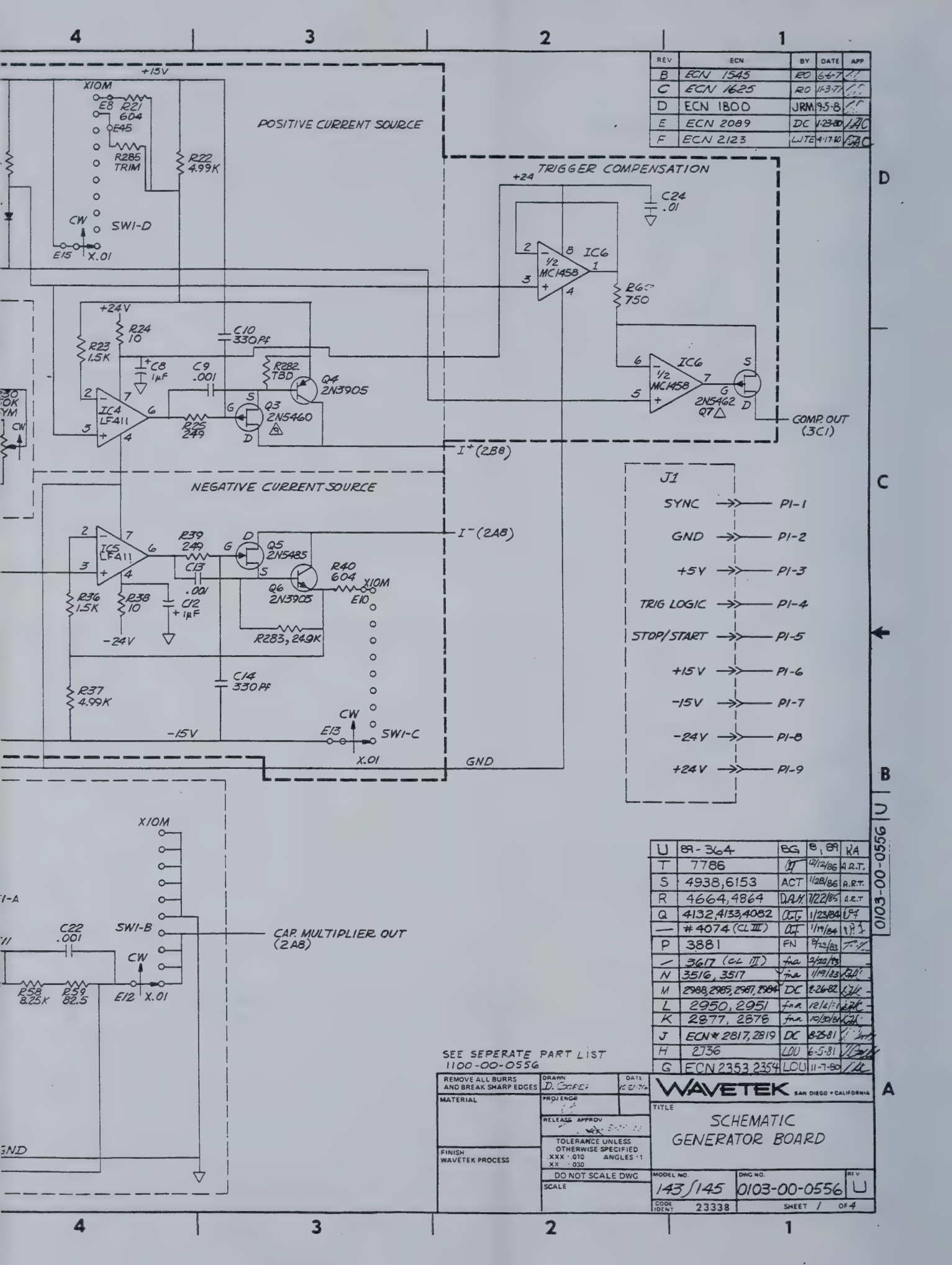
WAVETEK PARTS LIST | TITLE ASSY, FRONT PANEL -145 | ASSEMBLY NO. 1206-00-1555 | REV B | PAGE 2

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
39	WASHER, LOCK, REG S/S #6	MS 35338-136	CMRCL	2800-45-6000	4
NONE	WASHER, FLAT, SS, #6 LARGE OUTLINE	AN 960C6	CMRCL	2800-46-6001	4
43	MS, PH, PHLPS, 6-32 X 1 1/2, SS 18-8 SS, #6-32X1.5	MS 51957-36	CMRCL	2800-48-6124	4
30	SCREW, CAP, SOCKET HD, 6-32X3/8	MS 16995-17	CMRCL	2800-49-6106	2
41	NUT, MACHINE SCREW, 18-8 SS, #6-32	MS 35649-64	CMRCL	2800-50-6101	4
31	NUT, LOCKING, MS, 6-32, SS 18-8 SS, #6-32	MS 20364-632	CMRCL	2800-50-6102	2
35	SCREW, SELF-TAP, PH, PHL PS, #6 X 3/8, SS TYPE BF, #6X3/8	MS24626-19	CMRCL	2800-59-6006	4
SW1	SWITCH ASSY PB	1XTA0003TA100B-W/NE152	ECG	5102-00-0008	1
NONE	PWR CORD	17251	BELDN	6001-80-0005	1

WAVETEK PARTS LIST | TITLE ASSY, REAR PANEL -145 | ASSEMBLY NO. 1206-00-1556 | REV C | PAGE 2

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	CHECKED		TITLE: PARTS LIST STD CHASSIS
	PROJ. ENGR.		
FINISH WAVETEK PROCESS	RELEASE APPROV.		
DO NOT SCALE DRAWING	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ± .XX ± .XXX ± °		SIZE D | FSCM NO. 23338 | DWG. NO. 1101-00-0575 | REV P; SCALE | MODEL 145 | SHEET 1 OF 1



REV	ECN	BY	DATE	APP
B	ECN 1545	EO	6-6-77	
C	ECN 1625	RO	11-3-77	
D	ECN 1800	JRM	9-5-8	
E	ECN 2089	DC	1-23-80	
F	ECN 2123	LJTE	4-17-80	

U	89-364	BG	8, 89	KA
T	7786		12/2/86	A.R.T.
S	4938, 6153	ACT	1/28/86	A.R.T.
R	4664, 4864	DAM	7/22/85	A.R.T.
Q	4132, 4133, 4082		1/23/84	
—	#4074 (CL III)		1/19/84	
P	3881	FN	8/23/83	
/	3617 (CL III)	fna	3/22/83	
N	3516, 3517	fna	11/9/83	
M	2988, 2985, 2987, 2984	DC	8-26-82	
L	2950, 2951	fna	12/4/81	
K	2877, 2878	fna	10/30/81	
J	ECN # 2817, 2819	DC	8-25-81	
H	2736	LOU	6-5-81	
G	ECN 2353, 2354	LOU	11-7-80	

SEE SEPERATE PART LIST
1100-00-0556

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. Scott	DATE 12-21-76
MATERIAL	PROJ ENGR	
	RELEASE APPROV	
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1 XX ±.030	
	DO NOT SCALE DWG	
	SCALE	

WAVETEK SAN DIEGO • CALIFORNIA

TITLE
SCHEMATIC
GENERATOR BOARD

MODEL NO.	DWG NO.	REV
143/145	0103-00-0556	U
CODE IDENT 23338	SHEET 1 OF 4	

0103-00-0556 U

REV	ECN	BY	DATE	APP

INTEGRATOR/ TRIANGLE AMPLIFIER

TP2
R64 10Ω
15V
C65 5.6 35V
R62 1.5K
R63 1.5K
C29 .01
C66 .01
CR4 IN823A
CR5 IN823A
C27 .01
C30 .01
R66 150
R125 825
Q8 2N5485
R65 33.2
C28 220Pf SM
Q12 2N3563
TRI-FUNCTION (4B8, 3B1)
TP4
C26 100Pf SM
R67 316
C25 15Pf S.M.
R68 33.2
Q10 2N3905
R131 301K
C67 .1
C31 220Pf SM
R61 10
R69 33.2
R70 750
R141 10
Q9 2N5485
Q23 2N3905
R71 316
R72 33.2
Q11 2N3905
CR3 IN823A
C32 .01
R73 100
C68 .01
-15V
C33 .01
GND
GND
TP5

+15V
R284 2.15m
J2
1
-15V 2
N/C 3
1000-00-0221
OPTION 001
(5000 HOUR TIMER)

I+ (IC2)
TRIG OUT (3D1)
PI-1 SYNC
SW1-F
X10M
X1M
X100K
X10K
X1K
X100
X10
X1
X.1
X.01
CW
E14
C34 3.5/131
E16
C36 820Pf/13
C37, .01
C38, .1
C39, 1
SQUARE FUNCTION (3B5)
CAR MULTIPLIER OUT (1A3)
I⁻ (IC2)
TRIG. SYNC (3C7)

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS & BREAK SHARP EDGES
MATERIAL
FINISH
WAVETEK PROCESS
DRAWN D. COOPER 11-21-76
PROJ. MGR. 3/29/83
RELEASE APPROV 3-23-77
TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1° .XX ±.030
DO NOT SCALE DWG
SCALE

WAVETEK SAN DIEGO • CALIFORNIA

TITLE: SCHEMATIC GENERATOR BOARD

MODEL NO. 143/145
DWG NO. 0103-00-0556
REV U
CODE IDENT 23338
SHEET 2 OF 4

0103-00-0556 T

REV	ECN	BY	DATE	APP
B	ECN 1545	RO	6-6-7	
C	ECN 1625	RO	11-3-7	
D	ECN 1800	JRM	9-5-8	
E	ECN 2089	DC	4-23-80	
F	ECN 2123	WTE	4-17-80	

VCG AMP

SYMMETRY CONTROL MODEL 143 ONLY

VCG DIAL BUFFER

POSITIVE CURRENT SOURCE

NEGATIVE CURRENT SOURCE

TRIGGER COMPENSATION

GCV AMPLIFIER

CAPACITANCE MULTIPLIER

J1 VCG IN

DIAL 5K CW

SW1-D CW X.01

SW1-C CW X.01

SW2 MODEL 145 ONLY

R30 50K SYM

R29 TRIM

R4 1K

R9 1.5K

R6 698K, 1/2W NOM

R7 1M, 1/4 W

R10 10K VERNIER

R11 5.1M 1/2 W 10%

R12 10K

R13 100K

R14 4.99K

R8 5.1M 1/2W, 10%

R42 4.02K

R43 3.01K

R44 604

R41 10K

CR1

R34 4.75K

R35 500

R36 1.5K

R37 4.99K

R38 10

R39 249

R40 604

R283, 249K

C13 .001

C12 1μF

C14 330pf

R24 10

R23 1.5K

C8 1μF

C9 .001

R282 TBD

R25 249

R65 750

C24 .01

R46 6.98K

R48 1K

R52, 10K

R53, 100K

R54, 1M, 1/4W

R56, 10M 0.6W, 1%

R57 100

R58 8.25K

R59 82.5

R49 100

R50 10

C19 1.1% POLYC.

R45 1K

R47 1K

R51 1K

C20 .01

R55 10K

C18 .01

C17 .01

C21 .01

C22 .001

TP1

J10 GCV OUT

E6 E7

SW1-A SW1-B

CAR. MULTIPLIER OUT (2A8)

I⁺ (2B8)

I⁻ (2A8)

COMP. OUT (3C1)

J1

SYNC	P1-1
GND	P1-2
+5V	P1-3
TRIG LOGIC	P1-4
STOP/START	P1-5
+15V	P1-6
-15V	P1-7
-24V	P1-8
+24V	P1-9

* * = NOMINAL VALUE CALLED OUT ON P/L.
1 = MATCHED SET OF 3 RESISTORS
2 = MATCHED PAIR OF FD-777 DIODES (OTHER ON SHT. 3 OF 4)
3 = SELECTED COMPONENT
4 = MATCHED SET OF (2) 2N5485
5 = MATCHED SET OF (2) 2N3563
6 = MATCHED SET OF (3) CAPACITORS
7 = MATCHED SET OF (8) FD777 DIODES
4. DIODES ARE FD6666
3. RESISTORS ARE 1/8W, 1% MF
2. CAPACITANCE IN MICROFARADS
1. RESISTANCE IN OHMS

NOTE UNLESS OTHERWISE SPECIFIED

SEE SEPERATE PART LIST 1100-00-0556

REV		BY	DATE	APP
U	88-364	BG	8,88	KA
T	7786	JT	12/12/86	A.R.T.
S	4938, 6153	ACT	1/28/86	A.R.T.
R	4664, 4864	DAW	7/22/85	A.R.T.
Q	4132, 4133, 4082	DC	1/23/84	LAC
—	#4074 (CL III)	DC	1/11/84	LAC
P	3881	FN	8/23/83	
—	3617 (CL II)	ma	4/22/83	
N	3516, 3517	ma	1/11/83	
M	2988, 2985, 2987, 2984	DC	8-26-82	
L	2950, 2951	ma	12/14/81	
K	2877, 2876	ma	10/30/81	
J	ECN # 2817, 2819	DC	6-5-81	
H	2736	LDU	6-5-81	
G	ECN 2353, 2354	LDU	11-7-80	

REMOVE ALL BURRS AND BREAK SHARP EDGES
MATERIAL
FINISH WAVETEK PROCESS
DRAWN D. COPES DATE 4-21-76
PROJ ENGR
RELEASE APPROV
TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ±.010 ANGLES ±1 XX ±.030
DO NOT SCALE DWG
SCALE

WAVETEK SAN DIEGO • CALIFORNIA

TITLE
SCHEMATIC GENERATOR BOARD

MODEL NO 143/145
DWG NO 0103-00-0556
REV U
CODE IDENT 23338
SHEET 1 OF 4

0103-00-0556 U

REV	ECN	BY	DATE	APP

INTEGRATOR/ TRIANGLE AMPLIFIER

HYSTERESIS SWITCH

TRIANGLE BUFFER

SYNC AMPLIFIER

TP2 R64 10Ω +15V R95 33.2

R62 1.5K R63 1.5K C29 .01 CR4 IN823A CR5 IN823A C27 .01 C30 .01 R66 150 Q8 2N5485 R65 33.2 C28 220Pf S.M. Q12 2N3563 C26 100Pf S.M. R67 316 C25 15Pf S.M. R68 33.2 Q10 2N3905 C31 220Pf S.M. R61 10 R69 33.2 R70 750 Q9 2N5485 R71 316 R72 33.2 Q11 2N3905 CR3 IN823A C32 .01 R73 100

R93 500 R94 1K R96 1.21K R97 1.21K R98 1K R99 1K R100 ** C53 .01 Q15 2N3640 Q16 2N3640 R102 249 CR14 CR15 R101 33.2 R103 33.2 C48 TRIM R104 1K Q17 2N3905

C45 TRIM R85 54.9 NOM. C46 47Pf S.M. R86 604 C47 68Pf S.M. R88 316 R89 316 R91 604 C50 68Pf S.M. R92 54.9 NOM. C51 47Pf S.M. C52 TRIM

CR12 HP2811 CR13 HP2811 IC9 CA3049 C55 ** R106 464 R114 150 R115 392 C57 .01 R105 ** R107 500 C54 .01

R108 1K R109 33.2 R110 33.2 R111 1K C49 ** R113 1.5K C56 .01 R112 10K C58 .01 R116 10

R117 4.99K R118 100 C60 .01 R120 200 R123 10 C65 5.6 35V R119 33.2 R122 909 C66 .01 Q19 2N3905 R125 825 R124 100 Q22 2N3905 TP3 C63 .01 R126 33.2 Q18 2N3563 Q20 2N3563 R130 33.2 TP4 R131 301K C67 .1 R127 100 C61 5Pf R128 100 R129 100 R140 33.2 R141 10 CR16 IN4581 R137 249 Q23 2N3905 C59 10Pf R132 15K R134 316 R136 7.5K R138 7.5K Q21 2N3903 R133 7.5K C62 .01 R135 750 R139 10 C64 5.6 35V C68 .01 TP5

TRI-FUNCTION (488,381)

+15V R284 2.15m J2 → 1; -15V → 2; N/C → 3

1000-00-0221 OPTION 001 (5000 HOUR TIMER)

GND -15V R74 10 C33 .01 C54 .01 -15V GND -15V GND

R81 10 +15V

I+ (IC2) TRIG OUT (3D1)

SW1-F X10M X1M X100K X10K X1K X100 X10 X1 X.1 X.01 CW E14 E16 C34 3.5/13Pf C35 ** C36 820R13 S.M. C37 .01 C38 .1 C39 1

FB

R75 33.2 R78 7.5K Q13 2N3903 CR8 FD777 CR6 FD777 CR7 FD777 CR9 FD777 R76 33.2 R77 7.5K C43 .01 C40 3.5 13Pf C41 ** C42 .01

R79 33.2 R80 3.65K CR10 C44 .01 CR11 R82 33.2 Q14 2N3905 R83 3.65K R84 10 -15V

C69 22/25V +5V R144 249 CR17 R142 100 Q24 2N3905 -15V

PI-1 SYNC

R143 215 → SQUARE FUNCTION (385)

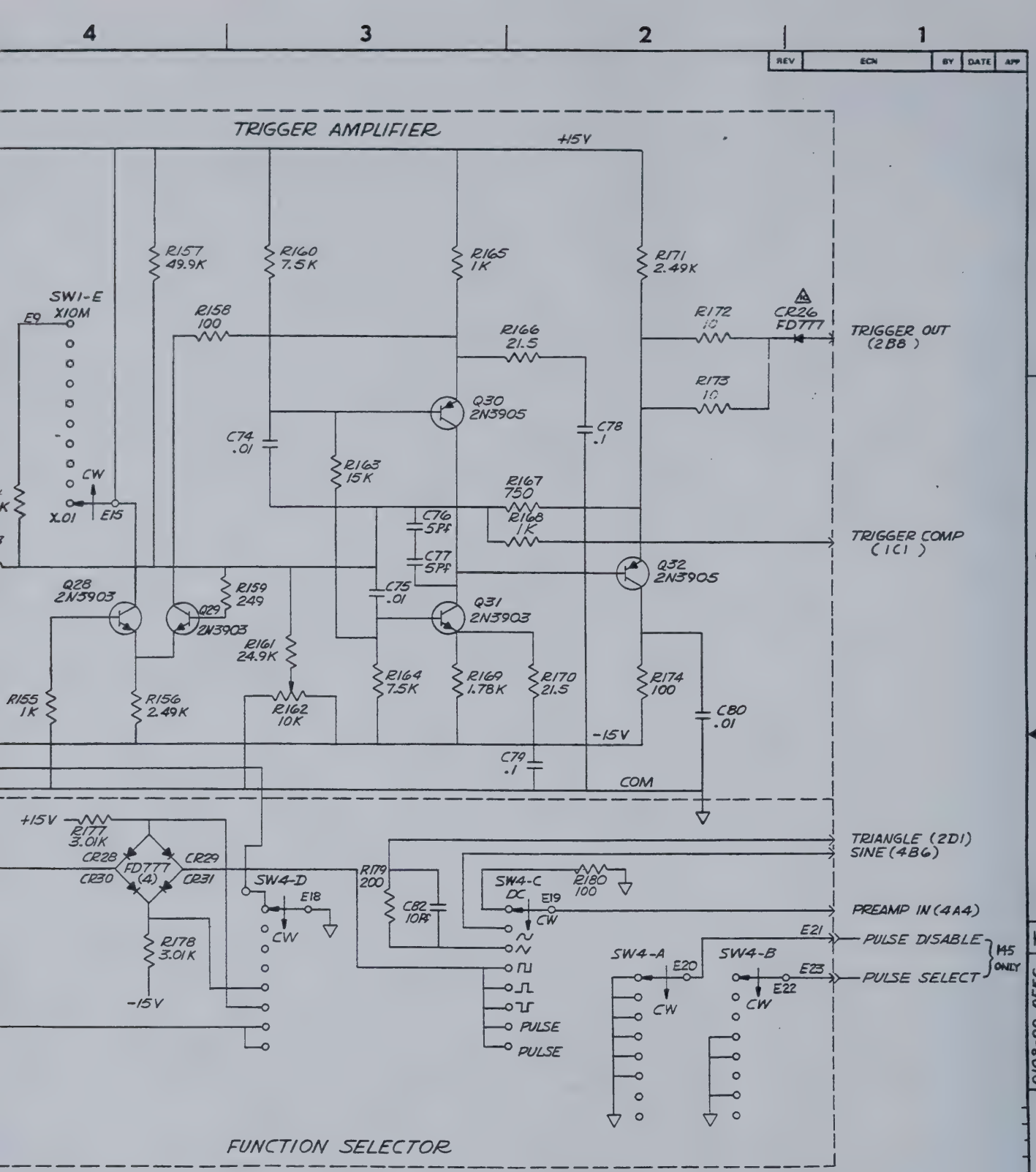
CAP MULTIPLIER OUT (1A3) I⁻ (IC2) TRIG. SYNC (3C7)

GND

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 1/12/78	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	PROJECT U-Fish	3/29/78	TITLE: SCHEMATIC GENERATOR BOARD
FINISH WAVETEK PROCESS	RELEASE, APPROV 3-23-77		
	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1° .XX ±.030		
	DO NOT SCALE DWG		
	SCALE	MODEL NO. 143/145	DWG NO. 0103-00-0556 REV U
		CODE IDENT 23338	SHEET 2 OF 4

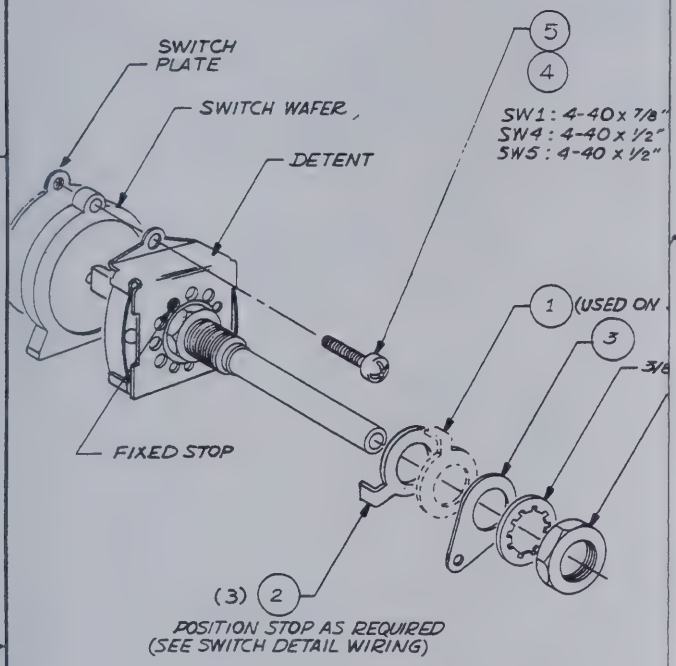
0103-00-0556 T



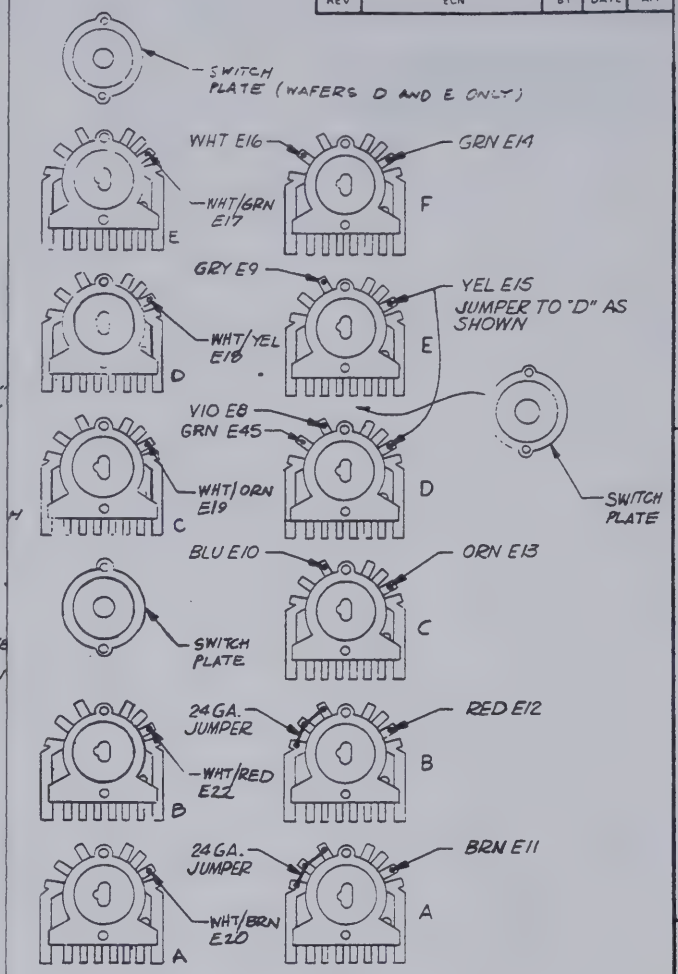
REV	ECN	BY	DATE	APP

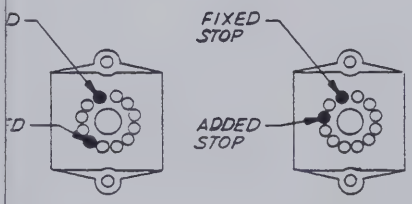
REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 11-8-76	WAVETEK SAN DIEGO • CALIFORNIA
MATERIAL	ENGINEER		TITLE SCHEMATIC GENERATOR BOARD
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1 .XX ±.030		
	DO NOT SCALE DWG		MODEL NO. 143/145 DWG NO. 0103-00-0556 REV U
	SCALE		CODE IDENT 23338 SHEET 3 OF 4

REV	ECN	BY	DATE	APP



TYPICAL HARDWARE STACK-UP





SW4 WIRING DETAIL

SW1 WIRING DETAIL

TENT SHOWN FROM
VIEW IN FULL COUNTER
KWISE POSSITION

NOTE: UNLESS OTHERWISE SPECIFIED

OVE ALL BURRS BREAK SHARP EDGES	DRAWN D. COOPER	DATE 4-26-77	WAVETEK SAN DIEGO • CALIFORNIA
ERIAL	PROJ ENGR	5/25/77	TITLE
	RELEASE APPROV		ASSEMBLY GENERATOR BOARD
TEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030		
	DO NOT SCALE DWG	MODEL NO 145	DWG NO 0101-00-0556 REV V
	SCALE	CODE IDENT 23338	SHEET 2 OF 3

0101-00-0556 V

REV	ECN	BY	DATE	APP

TRIGGER AMPLIFIER

+15V
P1-5
START/STOP
-15V
R30 10K
CW
SW-2
+15V
145 ONLY
START/STOP
R148 576 NOM.
C72 .01
R147 2.49K
R278 2.49K
R151 2.49K
SW1-E X10M
E9
CW
X.01
E15
R154 76.8K
R153 100
CR19 FD777
CR23
P1-4 TRIG LOGIC
R149 100
Q27 2N3903
C71 .01
CR18
TRI; SYNC (2A8)
R145 100
Q26 2N3905
CR20
CR21
CR22
CR24
CR25
R150 3.01K
R152 4.99K
R146 10K
C73 .01
-15V
GND
Q28 2N3903
Q29 2N3903
R159 249
R161 24.9K
R162 10K
R155 1K
R156 2.49K
R157 49.9K
R158 100
R160 7.5K
R165 1K
R171 2.49K
R166 21.5
Q30 2N3905
C74 .01
R163 15K
C78 .1
R167 750
R168 1K
C76 5PF
C77 5PF
C75 .01
Q31 2N3903
Q32 2N3905
R164 7.5K
R169 1.78K
R170 21.5
R174 100
C80 .01
C79 .1
-15V
COM
R172 10
R173 10
CR26 FD777
TRIGGER OUT (2B8)
TRIGGER COMP (1C1)

PULSE AMPLIFIER (145 ONLY)

+15V
C81 .01
FUNCTION SQUARE (2A2)
PULSE
E24
GND
E25
R175 49.9 1/4 W
Q25 2N3905
CR27
R176 1.5K
-15V
GND

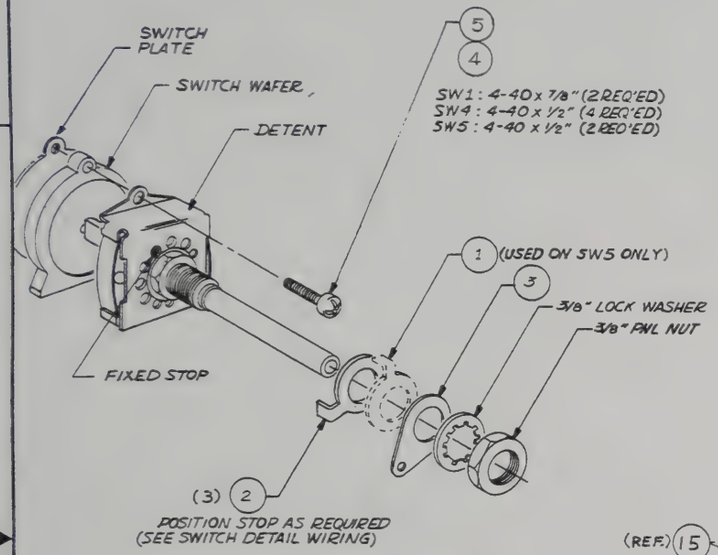
FUNCTION SELECTOR

+15V
R177 3.01K
CR28
CR29
CR30
CR31
FD777 (4)
R178 3.01K
-15V
SW4-E
E17
CW
SW4-D
E18
CW
R179 200
C82 10PF
SW4-C DC
E19
CW
R180 100
PULSE
PULSE
SW4-A
E20
CW
SW4-B
E22
CW
E21
E23
TRIANGLE (2D1)
SINE (4B6)
PREAMP IN (4A4)
PULSE DISABLE
PULSE SELECT
M5 ONLY
0103-00-0556 T

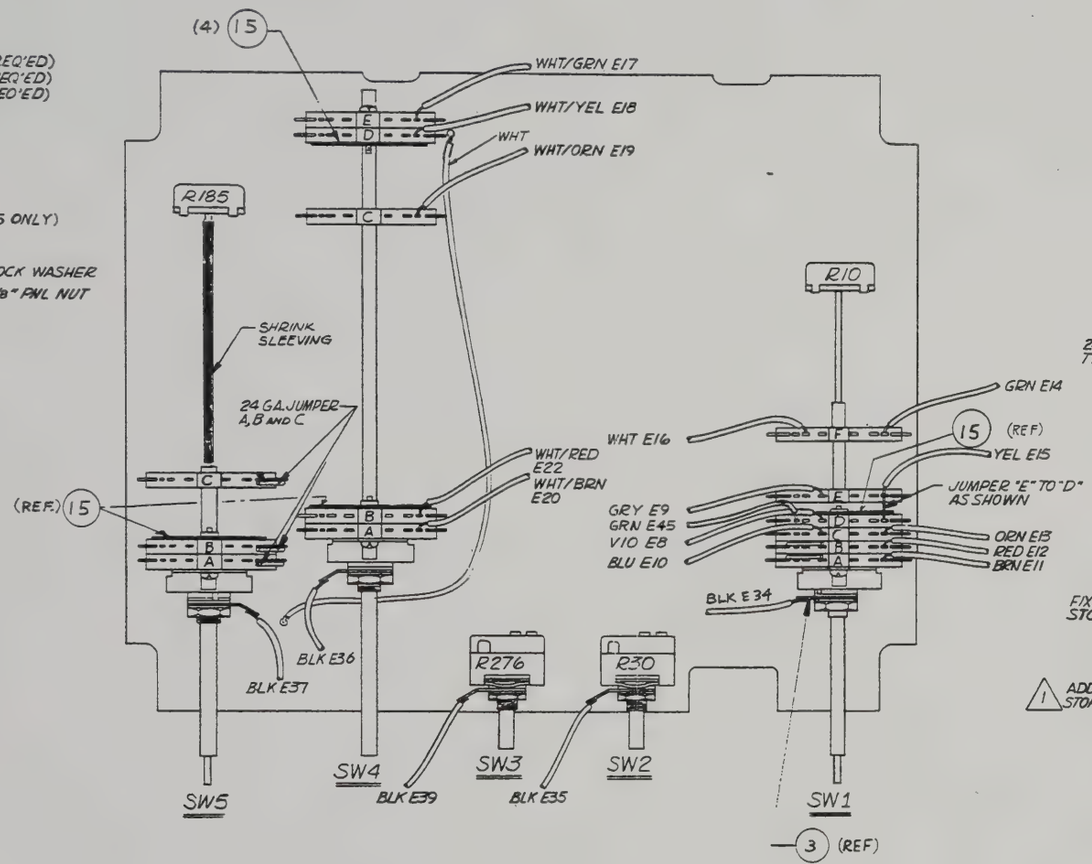
NOTE UNLESS OTHERWISE SPECIFIED

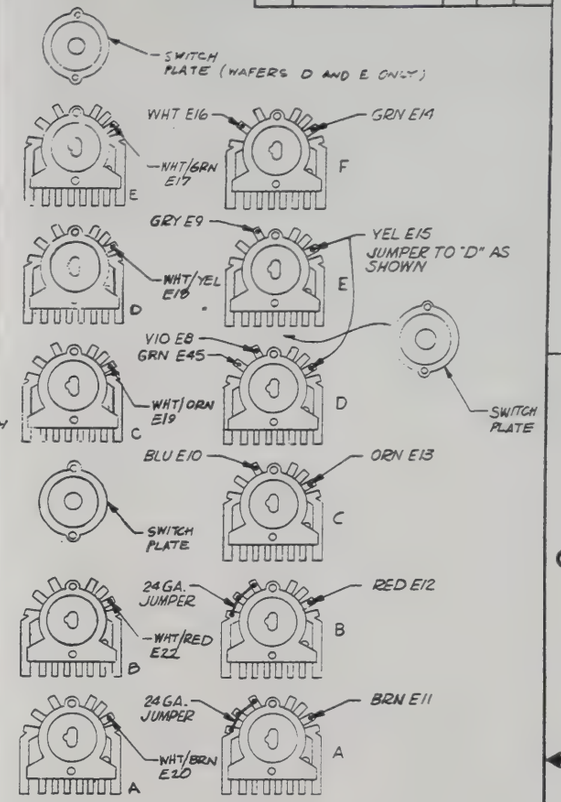
REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D COOPER	DATE 11-8-76	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	ENGR		TITLE SCHEMATIC GENERATOR BOARD
FINISH WAVETEK PROCESS	RELEASE APPROV		
	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1 .XX ±.030		
	DO NOT SCALE DWG		MODEL NO 143/145
	SCALE		DWG NO 0103-00-0556 REV U
			CODE IDENT 23338 SHEET 3 OF 4

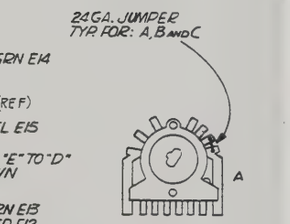
REV	ECN	BY	DATE	APP

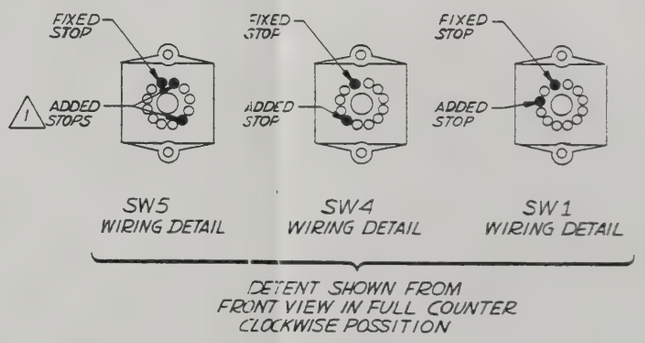


TYPICAL HARDWARE STACK-UP







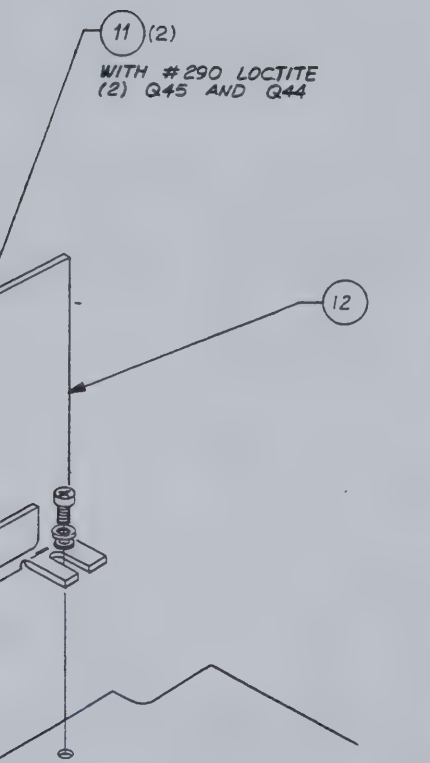


NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 4/8/77	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL #	PROJ. ENGR.	5/25/77	TITLE: ASSEMBLY GENERATOR BOARD
FINISH WAVETEK PROCESS #	RELEASE APPROV		
	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ±1 XX ± .030		
	DO NOT SCALE DWG		MODEL NO 145
	SCALE		DWG NO 0101-00-0556 REV V
			CODE IDENT 23338 SHEET 2 OF 3

0101-00-0556 V

REV	ECN	BY	DATE	APP



E44 WHT/RED

44

E43 RED

E41 GRN

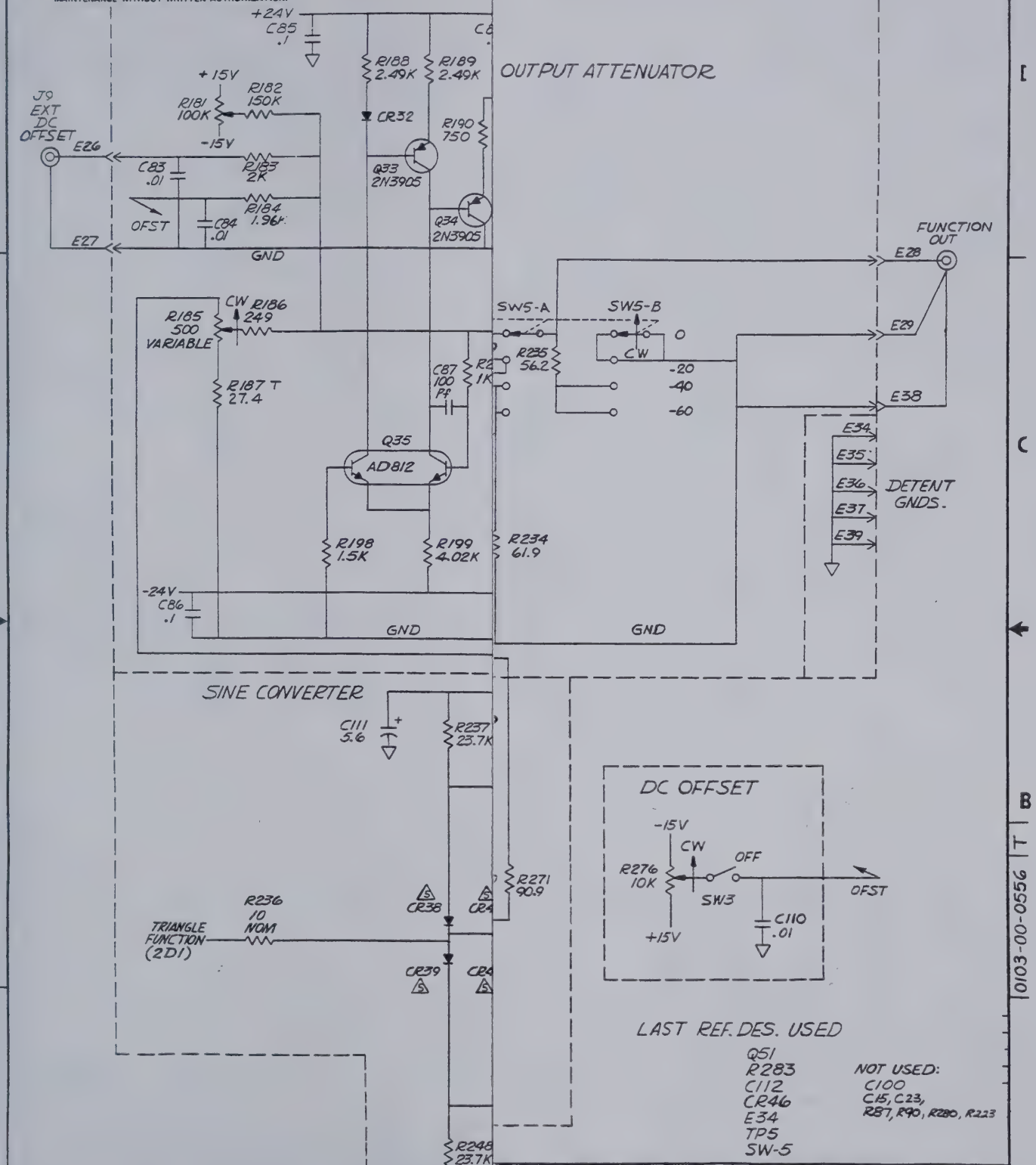
E42 WHT/GRN

BLK

0101-00-0556 V

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN F.N. AQUINO	DATE 2/10/82	WAVETEK SAN DIEGO • CALIFORNIA
MATERIAL	PROVENCE E. Hall		TITLE ASSEMBLY GENERATOR BOARD
	RELEASE APPROV 3/29/83		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1° .XX ±.030		
	DO NOT SCALE DWG	MODEL NO 145	DWG NO 0101-00-0556 REV V
	SCALE	CODE IDENT 23338	SHEET 3 OF 3

REV	ECN	BY	DATE	APP



0103-00-0556 T

LAST REF. DES. USED

Q51
R283
C112
CR46
E34
TP5
SW-5

NOT USED:
C100
C15, C23,
R87, R90, R280, R223

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES
MATERIAL
FINISH PER WAVETEK PROCESS

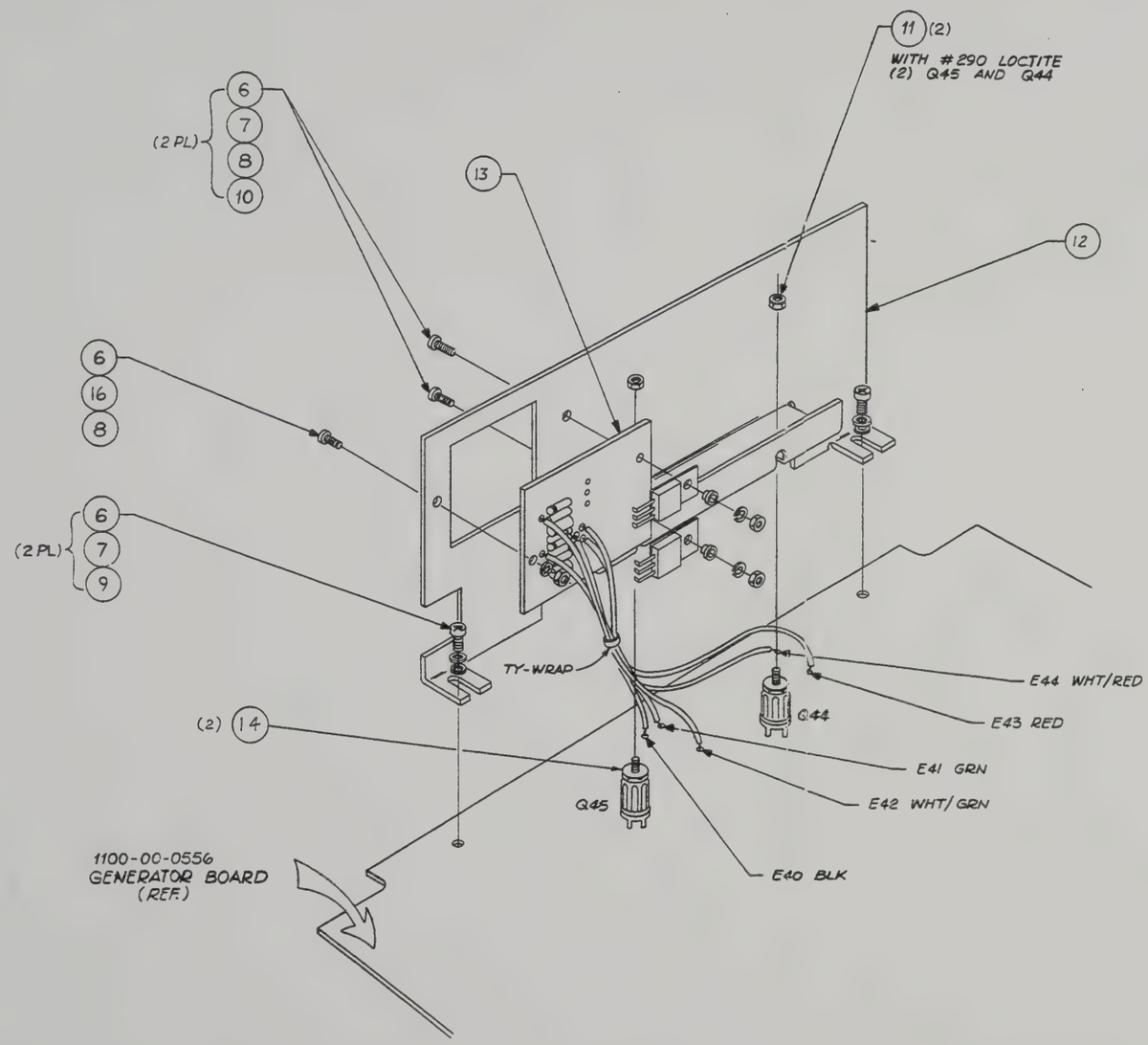
DRAWN D. COOPER DATE 11-1-76
PROGENCR 3/28/83
RELEASE APPROV 3-23-77
TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1° .XX ±.030
DO NOT SCALE DWG
SCALE

WAVETEK SAN DIEGO • CALIFORNIA

TITLE
SCHEMATIC GENERATOR BOARD

MODEL NO 143/145
DWG NO. 0103-00-0556
REV U
CODE IDENT 23338
SHEET 4 OF 4

REV	ECN	BY	DATE	APP



NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN F.N. AQUINO	DATE 3/10/83	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	PROGRESS		TITLE: ASSEMBLY GENERATOR BOARD
FINISH WAVETEK PROCESS	RELEASE APPROV	3/24/83	
	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1° XX ±.030		
	DO NOT SCALE DWG		MODEL NO 145 / DWG NO 0101-00-0556 / REV V
	SCALE		CODE IDENT 23338 / SHEET 3 OF 3

0101-00-0556 V

REV	ECN	BY	DATE	APP

OUTPUT AMPLIFIER

+24V C85 .1 · C88 .1 · +15V · R181 100K · R182 150K · -15V · R183 2K · R184 1.96K · OFST · C83 .01 · C84 .01 · GND · J9 EXT DC OFFSET · E26 · E27

R188 2.49K · R189 2.49K · CR32 · Q33 2N3905 · Q34 2N3905 · R190 750 · R191 3.65K · CR33 IN823A · R192 33.2 · R193 392 · R194 392 · R195 392 · Q36 2N3563 · Q38 2N5160 (HEAT SINK) · C89 .01

+24V · R281 24.9K · R196 10 · R197 100 Nom. · C94 .1 · Q40 2N3903 · R211 1.1K · CR34 · CR35 · R209 2K · Q42 2N2219A · Q44 (HEAT SINK) 2N3866 · C95 27µF 35V · C96 1µF · R224 49.9 1/2W · R225 49.9 1/2W · R226 49.9 1/2W · R227 49.9 1/2W

R185 500 VARIABLE · CW R186 249 · R187 T 27.4 · C87 100 Pf · R200 1K · Q35 AD812 · R198 1.5K · R199 4.02K · -24V C86 .1 · GND

C90 .01 · R201 464K · R203 10K · C92 .01 · Q37 2N3640 · R204 33.2 · Q39 2N3866 (HEAT SINK) · R202 3.65K · R205 464 · R206 464 · R207 464 · R208 100 Nom. · C91 .1 · C93 .1 · GND

R214 100 · R212 1.1K · R217 61.9 · Q41 2N3905 · Q43 2N2905A · R219 15 · R221 15 · Q45 2N5160 (HEAT SINK) · C97, 1µF · E42 · C98 27µF/35V · R213 24.9K · -24V · GND

R287 4.7 · R286 100 · E41 · U12 O A LM337T · CR49 IN758A · CR50 IN758A · E40 · CUR LMTR. P.C.

E43 · U13 I LM317T O A · R284 100 · R285 4.7 · CUR. LMTR. P.C. · CR47 IN758A · CR48 IN758A · E44

R215 61.9 · R218 15 · R216 100 · R220 15

OUTPUT ATTENUATOR

SW5-C · SW5-A · SW5-B · R230 240 · R235 56.2 · R231 499 · R228 909 · R232 4.99K · 0 · -20 · -40 · -60 · CW

R229 124 1/4W · R233 121 1/4W · R234 61.9 · GND

FUNCTION OUT · E28 · E29 · E38 · E34 · E35 · E36 · E37 · E39 · DETENT GNDS.

SINE CONVERTER

C111 5.6 · R237 23.7K · R238 8.25K · R239 11K · R240 11K · R241 150 · R242 249 · R243 576 · C99 220 Pf S.M. NOM. · SINE FUNCTION (3B1) · R244 61.9 · CR38 · CR40 · CR42 · CR44 · CR39 · CR41 · CR43 · CR45 · FD777 SET OF 8 · R245 249 · R246 576 · R247 150 · R236 10 NOM · TRIANGLE FUNCTION (2D1) · R248 23.7K · R249 8.25K · R250 11K · R251 11K · -15V · C112 5.6

PRE-AMPLIFIER

+15V · R253 33.2 · R254 2.49K · R255 2.49K · C101 .01 · CR46 · Q46 2N3905 · R261 7.5K · R262 249 · R267 1.5K · Q49 2N3640 · R268 61.9 · C107 · C103 .01 · R269 33.2 · C108 5Pf (NOM.) · Q47 2N3905 · R263 13K NOM. · R264 681 · R252 100K · R256 301K · C102 100Pf · Q48 AD812 · R259 499 · C104 .01 · Q50 2N3563 · R265 10K · R272 33.2 · R273 10 · Q51 2N3905 · R257 1K · R258 3.65K · R260 61.9 · R266 7.5K · R274 2.49K · R275 61.9 · C106 .1 · C105 .1 · GND · -15V · C109 .1 · R270 631 · R271 90.9

PREAMP IN (3B1)

DC OFFSET

-15V · CW · OFF · R276 10K · SW3 · +15V · OFST · C110 .01

LAST REF. DES. USED

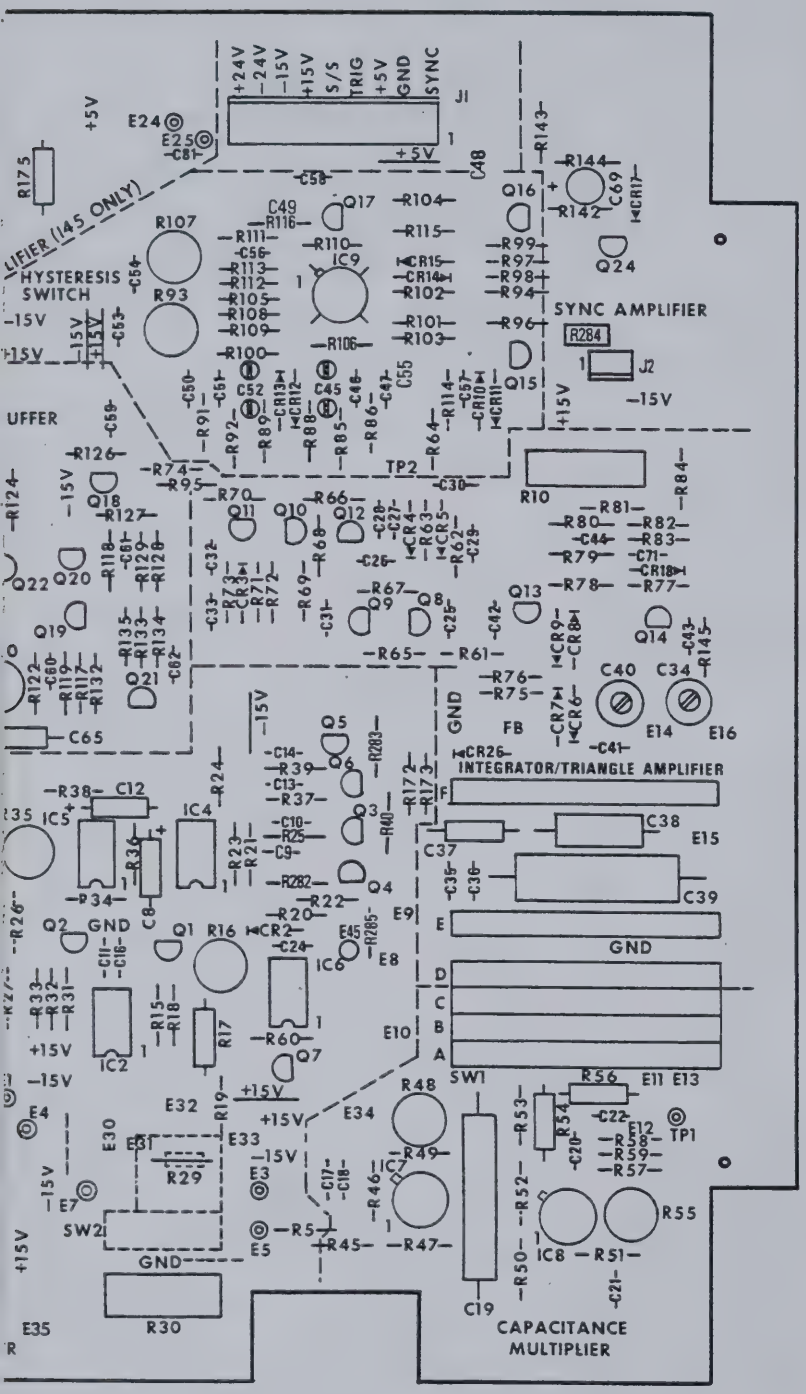
Q51 · R283 · C112 · CR46 · E34 · TP5 · SW-5

NOT USED: C100 · C15, C23, R87, R90, R280, R223

NOTE. UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 11-1-76	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	PROGNGR [illegible]	3/9/93	TITLE SCHEMATIC GENERATOR BOARD
FINISH WAVETEK PROCESS	RELEASE APPROV [illegible] 3-23-77		
	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1 XX ±.030		
	DO NOT SCALE DWG	MODEL NO 143/145	DWG NO 0103-00-0556 REV U
	SCALE	CODE IDENT 23338	SHEET 4 OF 4

0103-00-0556 T



MADE FROM 0100-00-0556-3F

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE	WAVETEK SAN DIEGO • CALIFORNIA
MATERIAL	PROJ ENGR		TITLE: PCA, GENERATOR BD
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030		
	DO NOT SCALE DWG		MODEL NO 145 / DWG NO 1100-00-0556 / REV
	SCALE		CODE IDENT 23338 / SHEET OF

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO
NONE	ASSY DRWG GENERATOR	0101-00-0556
NONE	SCHEMATIC GENERATOR	0103-00-0556
13	PCA, CURRENT LIMITER	143-1008
NONE	KIT, PRE WAVE LOAD 145-0556	145-1563
C49	CAP, CER, 56PF, 1KV	DD-560
C37 38 39	CAP SET, POLYC MIXED MATCHED SET	1509-80-0008
J1	CONN, 9PIN	09-60-1091
NONE	SOCKET, MINISERT	75060-012
NONE	KNOB STD	RB-67-1-SB-M
NONE	COAX KNOB SET	RB-67-1-SB+O-M-9
NONE	SUPER KIT	2300-0145-01
NONE	HEAT SINK	207
NONE	TRANSIPAD	531-218
14	HEATSINK	2606SH5E
11	NUT, MACHINE SCREW, 18-8 SS, #6-32 SMALL PATTERN	NAS 671C6

DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
DRWG GENERATOR	0101-00-0556	WVTK	0101-00-0556	1
ATIC GENERATOR	0103-00-0556	WVTK	0103-00-0556	1
PREPPED 556	143-1564	WVTK	1208-00-1564	1
ER, 5PF, 1KV	DD-050 LONG LEAD	CRL	1500-00-5001	1
ER 5PF, 1KV, 10%	0311-00018	WVTK	1500-00-5011	4
ER, 10PF, 1KV	DD-100	CRL	1500-01-0011	2
ER, 100PF, 1KV	DD-101	CRL	1500-01-0111	2
ER, .001UF, 1KV	DD-102	CRL	1500-01-0211	3
ER MON .01MF AXIAL	CAC02Z5U103Z100A	CORNG	1500-01-0310	45
ER, MON, .1MF, 50V,	CAC03Z5U104Z050A	CORNG	1500-01-0405	13
ER, 150PF, 1KV	DD-151	CRL	1500-01-5111	1
ER, 330PF, 1KV	DD-331	CRL	1500-03-3111	2

WAVETEK PARTS LIST	TITLE PCA, GENERATOR	ASSEMBLY NO. AVE LOAD 145-0556	ASSEMBLY NO. 1208-00-1563	REV AB
			PAGE 1	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO
Q44	TRANS	2N3866
Q45	TRANS	2N5160-18

DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
ICA, 100PF, 500V	DM15-101J	ARCO	1500-11-0100	1
ICA, 13PF, 500V	DM15-150J	ARCO	1500-11-5000	1
ICA, 220PF, 500V, R	DM15-221J	ARCO	1500-12-2100	3
ICA, 30PF, 500V, RA	DM15-300J	ARCO	1500-13-0000	1
ICA, 47PF, 500V	DM15-470J	ARCO	1500-14-7000	2
ICA, 68PF, 500V	DM15-680J	ARCO	1500-16-8000	3
ICA, 820PF, 300V	DM15-821F	ARCO	1500-18-2101	1
LECT, 22MF, 25V, RA	SRA25V822RM6X7LL	UNCON	1500-32-2002	1
OLYC, 1MF, 100V, AX	B1A105F	ELPAC	1500-41-0504	1
AR, 3.5-13PF,	7S-TRIKO-02 3.5/13PF	TRIKO	1500-51-3000	2
ANT, 1MF, 35V	150D105X9035A2	SPRAG	1500-71-0502	4
ANT 35V+/-10%, 0.25LS	199D276X9035FE4	SPRAG	1500-72-7602	2
ANT, 5.6MF, 35V	150D565X9035B2	SPRAG	1500-75-6502	4
SIPAD	10123N	METRS	2800-11-0003	2

WAVETEK PARTS LIST	TITLE PCA, GENERATOR	ASSEMBLY NO. AVE LOAD 145-0556	ASSEMBLY NO. 1208-00-1563	REV AB
			PAGE 2	

NOTE UNLESS OTHERWISE SPECIFIED

MOVE ALL BURRS
REAK SHARP EDGES
AL
K PROCESS
T SCALE DRAWING

DRAWN	DATE
CHECKED	
PROJ. ENGR.	
RELEASE APPROV.	

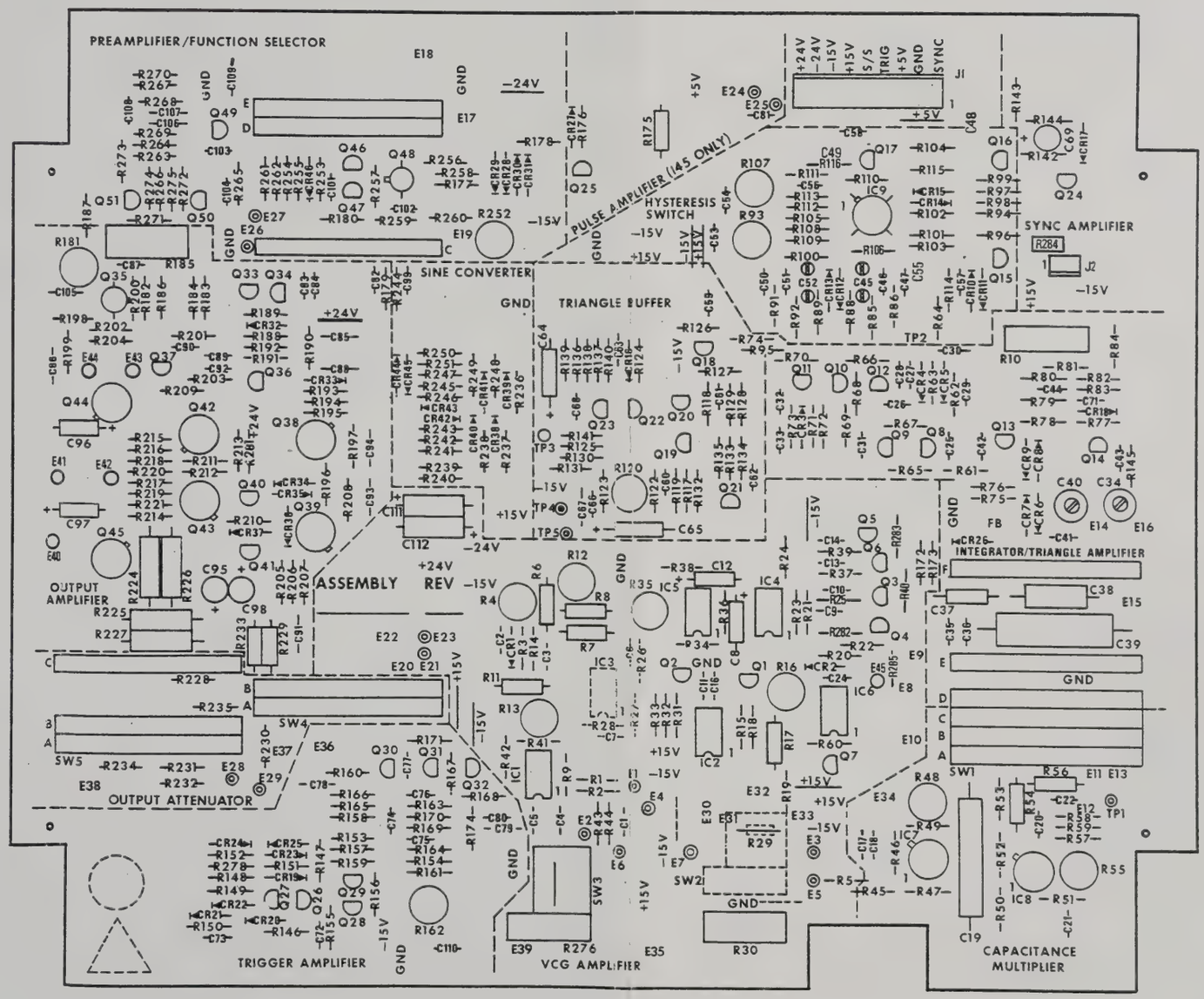
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
± .XX ± ±
.XXX ±

WAVETEK SAN DIEGO, CALIFORNIA

TITLE
PARTS LIST
PCA, GENERATOR

SIZE	FSCM NO.	DWG. NO.	REV
D	23338	1100-00-0556	AC

SCALE | MODEL 145 | SHEET 1 OF 3



MADE FROM 0100-00-0556-3F

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE	WAVETEK SAN DIEGO • CALIFORNIA
MATERIAL	PROJ ENGR		TITLE: PCA, GENERATOR BD
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030		
	DO NOT SCALE DWG		MODEL NO 145 · DWG NO 1100-00-0556 · REV
	SCALE		CODE IDENT 23338 · SHEET OF

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG GENERATOR	0101-00-0556	WVTK	0101-00-0556	1
NONE	SCHEMATIC GENERATOR	0103-00-0556	WVTK	0103-00-0556	1
13	PCA, CURRENT LIMITER	143-1008	WVTK	1208-00-1008	1
NONE	KIT, PRE WAVE LOAD 145-0556	145-1563	WVTK	1208-00-1563	1
C49	CAP, CER, 56PF, 1KV	DD-560	CRL	1300-05-6001	1
C37 38 39	CAP SET, POLYC MIXED MATCHED SET	1309-80-0008	BISHO	1309-80-0008	1
J1	CONN, 9PIN	09-60-1091	MOLEX	2100-02-0052	1
NONE	SOCKET, MINISERT	73060-012	BERG	2100-03-0076	4
NONE	KNOB STD	RB-67-1-SB-M	ROGAN	2400-01-0008	3
NONE	COAX KNOB SET	RB-67-1-SB+0-M-9	ROGAN	2400-01-0009	2
NONE	SUPER KIT	2500-0145-01	WVTK	2500-0145-01	1
NONE	HEAT SINK	207	WAKE	2800-11-0001	2
NONE	TRANSIPAD	531-218	BIVAR	2800-11-0004	2
14	HEATSINK	2606SH5E	WAKE	2800-11-0012	2
11	NUT, MACHINE SCREW, 18-8 SS, #6-32 SMALL PATTERN	NAS 671C6	CMRCL	2800-50-6100	2

WAVETEK PARTS LIST | TITLE: PCA, GENERATOR | ASSEMBLY NO. 1100-00-0556 | REV AC

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG, CURRENT LIMITER BOARD	0101-00-1008	WVTK	0101-00-1008	1
NONE	SCHEMATIC GENERATOR	0103-00-0556	WVTK	0103-00-0556	1
12	HEATSINK BRACKET	143-5083	WVTK	1400-01-5083	1
NONE	CURRENT LIMITER BD REF: SPEC 0008-00-0455 REV C	143-1008	WVTK	1700-00-1008	1
10	WASHER	5607-150	SESTM	2800-11-0015	2
7	WASHER, LOCK REG, S/S #4	MS 35338-135	CMRCL	2800-45-4000	2
16	LOCK WASHER, INTERNAL TOOTH, SS #4	MS 35333-70	CMRCL	2800-45-4001	1
6	SCREW PLPS PAN M/S 18-8 S/S 4-40X3/8	MS 51957-15	CMRCL	2800-48-4106	3
8	NUT, MACHINE SCREW, 18-8 SS, #4-40	NAS 671C4	CMRCL	2800-50-4100	3
R285 R287	RES, C, 1/2W, 5%, 4.7	RC-1/2-4R7J	STKPL	4700-25-0479	2
R284 R286	RES, MF, 1/8W, 1%, 100	RN55D-1000F	TRW	4701-03-1000	2
CR47 CR48 CR49 CR50	DIODE, ZENER, 10V	1N758A	FAIR	4801-01-0758	4
U13	VOLT REGULATOR, 3 TERMINAL ADJUSTABLE	LM317T	NSC	7000-03-1700	1

WAVETEK PARTS LIST | TITLE: PCA, CURRENT LIMITER | ASSEMBLY NO. 1208-00-1008 | REV B

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG GENERATOR	0101-00-0556	WVTK	0101-00-0556	1
NONE	SCHEMATIC GENERATOR	0103-00-0556	WVTK	0103-00-0556	1
NONE	PC BD PREPPED 145-0556	145-1564	WVTK	1208-00-1564	1
C55	CAP, CER, 5PF, 1KV	DD-050 LONG LEAD	CRL	1300-00-5001	1
C108T C61 C76 C77	CAP, CER DISK, 5PF, 1KV, 10%	0311-00018	WVTK	1300-00-5011	4
C59 C82	CAP, CER, 10PF, 1KV	DD-100	CRL	1300-01-0011	2
C102 C87	CAP, CER, 100PF, 1KV	DD-101	CRL	1300-01-0111	2
C13 C22 C9	CAP, CER, .001UF, 1KV	DD-102	CRL	1300-01-0211	3
C1 C101 C103 C104 C11 C110 C16 C17 C18 C20 C21 C24 C27 C29 C3 C30 C32 C33 C4 C42 C43 C44 C5 C53 C54 C56 C57 C58 C60 C62 C63 C66 C68 C71 C72 C73 C74 C75 C80 C81 C83 C84 C89 C90 C92	CAP CER MON .01MF 50V, AXIAL	CAC02Z5U103Z100A	CORNG	1300-01-0310	45
C105 C106 C107 C109 C67 C78 C79 C85 C86 C88 C91 C93 C94	CAP, CER, MON, .1MF, 50V, AXIAL	CAC03Z5U104Z050A	CORNG	1300-01-0405	13
C2	CAP, CER, 150PF, 1KV	DD-151	CRL	1300-01-5111	1
C10 C14	CAP, CER, 330PF, 1KV	DD-331	CRL	1300-03-3111	2

WAVETEK PARTS LIST | TITLE: KIT, PRE WAVE LOAD 145-0556 | ASSEMBLY NO. 1208-00-1563 | REV AB

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
Q44	TRANS	2N3866	MOT	4901-03-8660	1
Q45	TRANS	2N5160-18	MOT	4901-05-1600	1

WAVETEK PARTS LIST | TITLE: PCA, GENERATOR | ASSEMBLY NO. 1100-00-0556 | REV AC

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
U12	POS VOLT REGULATOR	LM337T	NSC	7000-03-3700	1

WAVETEK PARTS LIST | TITLE: PCA, CURRENT LIMITER | ASSEMBLY NO. 1208-00-1008 | REV B

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
C26	CAP, MICA, 100PF, 300V	DM15-101J	ARCO	1300-11-0100	1
C25	CAP, MICA, 15PF, 500V	DM15-150J	ARCO	1300-11-5000	1
C28 C31 C99T	CAP, MICA, 220PF, 500V, RADIAL	DM15-221J	ARCO	1300-12-2100	3
NONE	CAP, MICA, 30PF, 500V, RADIAL	DM15-300J	ARCO	1300-13-0000	1
C46 C51	CAP, MICA, 47PF, 500V	DM15-470J	ARCO	1300-14-7000	2
C47 C50 NONE	CAP, MICA, 68PF, 500V	DM15-680J	ARCO	1300-16-8000	3
C36	CAP, MICA, 820PF, 300V	DM15-821F	ARCO	1300-18-2101	1
C69	CAP, ELECT, 22MF, 25V, RADIAL	SRA25VB22RM6X7LL	UNCON	1300-32-2002	1
C19	CAP, POLYC, 1MF, 100V, AXIAL	B1A105F	ELPAC	1300-41-0504	1
C34 C40	CAP, VAR, 3.5-13PF, 250V	7S-TRIKO-02 3.5/13PF	TRIKO	1300-51-3000	2
C12 C8 C96 C97	CAP, TANT, 1MF, 35V	150D105X9035A2	SPRAG	1300-71-0502	4
C95 C98	CAP, TANT 47UF, 35V+/-10%, 0.25LS	199D476X9035FE4	SPRAG	1300-72-7602	2
C111 C112 C64 C65	CAP, TANT, 3.6MF, 35V	150D563X9035B2	SPRAG	1300-73-6302	4
NONE	TRANSIPAD	10123N	METRS	2800-11-0003	2

WAVETEK PARTS LIST | TITLE: KIT, PRE WAVE LOAD 145-0556 | ASSEMBLY NO. 1208-00-1563 | REV AB

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES | MATERIAL | FINISH: WAVETEK PROCESS | DO NOT SCALE DRAWING

DRAWN | DATE | CHECKED | PROJ. ENGR. | RELEASE APPROV.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES .XX ± .XXX ± ±

WAVETEK SAN DIEGO, CALIFORNIA

TITLE: PARTS LIST PCA, GENERATOR

SIZE	FSCM NO.	DWG. NO.	REV
D	23338	1100-00-0556	AC

SCALE | MODEL 145 | SHEET 1 OF 3

REV	ECO	BY	DATE	APP

-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
D-2372F	TRW	4701-03-2372	2
D-2490F	TRW	4701-03-2490	11
D-2491F	TRW	4701-03-2491	12
D-2492F	TRW	4701-03-2492	4
D-2749F	TRW	4701-03-2749	1
D-3011F	TRW	4701-03-3011	4
D-3013F	TRW	4701-03-3013	2
D-3160F	TRW	4701-03-3160	5
D-3329F	TRW	4701-03-3329	22
D-3571F	TRW	4701-03-3571	2
D-3651F	TRW	4701-03-3651	5
D-3920F	TRW	4701-03-3920	4
D-4021F	TRW	4701-03-4021	2
D-4640F	TRW	4701-03-4640	4

ASSEMBLY NO. 1208-00-1563	REV AB
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REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
R154	RES, MF, 1/8W, 1%, 76.8K	RN55D-7682F	TRW	4701-03-7682	1
R125	RES, MF, 1/8W, 1%, 825	RN55D-8250F	TRW	4701-03-8250	1
R238 R249 R58	RES, MF, 1/8W, 1%, 8.25K	RN55D-8251F	TRW	4701-03-8251	3
R197T R206T R59	RES, MF, 1/8W, 1%, 82.5	RN55D-82R5F	TRW	4701-03-8259	3
R122 R228	RES, MF, 1/8W, 1%, 909	RN55D-9090F	TRW	4701-03-9090	2
R271	RES, MF, 1/8W, 1%, 90.9	RN55D-90R9F	TRW	4701-03-9099	1
R7	RES, MF, 1/4W, 1%, 1M	RN60D-1004F	TRW	4701-13-1004	1
R233	RES, MF, 1/4W, 1%, 121	RN60D-1210F	TRW	4701-13-1210	1
R229	RES, MF, 1/4W, 1%, 124	RN60D-1240F	TRW	4701-13-1240	1
R175	RES, MF, 1/4W, 1%, 49.9	RN60D-49R9F	TRW	4701-13-4999	1
R6T	RES, MF, 1/4W, 1%, 698K	RN60D-6983F	TRW	4701-13-6983	1
R224 R225 R226 R227	RES, MF, 1/2W, 1%, 49.9	RN65D-49R9F	TRW	4701-23-4999	4
R52 R53 R54	RES, MF, MIXED SET	4789-00-0043	IRC	4789-00-0043	1
R56	RES, MF, .6W, 1%, 10M	ML-1B1	CADDO	4799-00-0003	1
17	RES, 0 OHM JUMPER	JP02T68G	RCMM	4799-00-0087	9
CR3 CR33 CR4 CR5	DIODE, ZENER, 6.2V, IN823	1N823A	MOT	4801-01-0823	4

WAVETEK PARTS LIST	TITLE KIT, PRE WAVE LOAD 145-0556	ASSEMBLY NO. 1208-00-1563	REV AB
		PAGE 7	

-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
D-4642F	TRW	4701-03-4642	1
D-4649F	TRW	4701-03-4649	1
D-4751F	TRW	4701-03-4751	1
D-4990F	TRW	4701-03-4990	2
D-4991F	TRW	4701-03-4991	8
D-4992F	TRW	4701-03-4992	1
D-5499F	TRW	4701-03-5499	2
D-5629F	TRW	4701-03-5629	1
D-5760F	TRW	4701-03-5760	3
D-6040F	TRW	4701-03-6040	5
D-6199F	TRW	4701-03-6199	7
D-6810F	TRW	4701-03-6810	2
D-6981F	TRW	4701-03-6981	1
D-7500F	TRW	4701-03-7500	5
D-7501F	TRW	4701-03-7501	9

ASSEMBLY NO. 1208-00-1563	REV AB
PAGE 6	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
CR16	DIODE, REFERENCE, LOW LEVEL, TEMP COMP	1N4581	MICRO	4801-01-4581	1
CR19 CR28 CR29 CR30 CR31 CR6 CR7 CR8 CR9	DIODE, ULTRA FAST	1N4244	T/CSF	4807-02-0777	9
CR1 CR10 CR11 CR14 CR15 CR17 CR18 CR20 CR21 CR22 CR23 CR24 CR25 CR27 CR32 CR34 CR35 CR36 CR37 CR46	DIODE 1N4148 COMPUTER, G/P, 75V, 200M A, SWITCHING	1N4148	FAIR	4807-02-6666	20
CR12 CR13	DIODE 5082-2811 SCHOTTKY, 15V, 20MA	5082-2811	HP	4809-02-2811	2
CR2 26	DIODE, M/PR, FD-777 QTY: 2: 4807-02-0777	4898-00-0004	KLG	4898-00-0004	1
CR38 39 40 41 42 43 44 45	DIODE, SET, 8-FD-777 QTY: 8: 4807-02-0777	4898-00-0010	KLG	4898-00-0010	1
Q42	TRANS 2N2219A NPN GENERAL PURPOSE TO-5	2N2219A	NSC	4901-02-2191	1
Q43	TRANS 2N2905A PNP GENERAL PURPOSE TO-5	2N2905A	NSC	4901-02-9051	1
Q12 Q36 Q50	TRANS, NPN, TO-92	2N3563	FAIR	4901-03-3630	3
Q15 Q16 Q37 Q49	TRANS, PNP, TO-92	MPS3640	MOT	4901-03-6400	4
Q39	TRANS	2N3866	MOT	4901-03-8660	1

WAVETEK PARTS LIST	TITLE KIT, PRE WAVE LOAD 145-0556	ASSEMBLY NO. 1208-00-1563	REV AB
		PAGE 8	

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	CHECKED		TITLE
	PROJ. ENGR.		PARTS LIST PCA, GENERATOR
	RELEASE APPROV.		
FINISH WAVETEK PROCESS	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE. FRACTIONS DECIMALS ANGLES ± .XX ± .XXX ±		SIZE D · FSCM NO. 23338 · DWG. NO. 1100-00-0556 · REV AC
DO NOT SCALE DRAWING			SCALE · MODEL 145 · SHEET 2 OF 3

REV	ECO	BY	DATE	APP

RT DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
SY, SWITCH SW-1 5-0556	145-1565	WVTK	1202-00-1565	1
SY, SWITCH SW-2 5-0556	145-1566	WVTK	1202-00-1566	1
SY, SWITCH SW-3 5-0556	145-1567	WVTK	1202-00-1567	1
SY, SWITCH SW-4 5-0556	145-1568	WVTK	1202-00-1568	1
SY, SWITCH SW-5 5-0556	145-1569	WVTK	1202-00-1569	1

IT	ASSEMBLY NO. 2300-0145-01 PAGE 1	REV

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE
MATERIAL	CHECKED	
	PROJ. ENGR.	
	RELEASE APPROV.	
FINISH WAVETEK PROCESS	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ± .XX ± .XXX ± °	
DO NOT SCALE DRAWING		

WAVETEK SAN DIEGO • CALIFORNIA

TITLE

PARTS LIST
PCA, GENERATOR

SIZE	FSCM NO.	DWG. NO.	REV
D	23338	1100-00-0556	AC

SCALE | MODEL 145 | SHEET 3 OF 3

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	TRANSIPAD	531-218	BIVAR	2800-11-0004	2
FB1	FERRITE BEAD	56-590-65/3B	FERRX	3100-00-0001	1
R4 R48	POT, TRIM, 1K	91AR1K	BECK	4600-01-0209	2
R12 R162 R35	POT, TRIM, 10K	91AR10K	BECK	4600-01-0315	3
R13 R16 R181 R252	POT, TRIM, 100K	91AR100K	BECK	4600-01-0402	4
R120	POT, TRIM, 200	91AR200	BECK	4600-02-0101	1
R107 R35 R93	POT, TRIM, 500	91AR500	BECK	4600-05-0104	3
R11 R8	RES. C. 1/2W, 10%, 5.1M	RC-1/2-515J	STKPL	4700-25-5104	2
R17	RES. C. 1/2W, 10%, 6.8M			4700-25-6804	1
R118 R124 R127 R128 R129 R142 R145 R149 R153 R158 R174 R180 R214 R216 R49 R57 R73	RES. MF, 1/8W, 1%, 100	RN55D-1000F	TRW	4701-03-1000	17
R104 R108 R111 R155 R165 R168 R200 R257 R45 R47 R51 R94 R98 R99	RES. MF, 1/8W, 1%, 1K	RN55D-1001F	TRW	4701-03-1001	14
R112 R146 R203 R265 R41	RES. MF, 1/8W, 1%, 10K	RN55D-1002F	TRW	4701-03-1002	5
R116 R123 R139 R141 R172 R173 R196 R210 R236T R24 R273 R38 R50 R61 R64 R74	RES. MF, 1/8W, 1%, 10	5043ED10R100F	MEPCO	4701-03-1009	18

WAVETEK PARTS LIST | TITLE KIT, PRE WAVE LOAD 145-0556 | ASSEMBLY NO 1208-00-1563 | PAGE 3 | REV AB

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
R237 R248	RES. MF, 1/8W, 1%, 23.7K	RN55D-2372F	TRW	4701-03-2372	2
R102 R137 R144 R159 R186 R230 R242 R245 R25 R262 R39	RES. MF, 1/8W, 1%, 249	RN55D-2490F	TRW	4701-03-2490	11
R147 R151 R156 R171 R188 R189 R19 R254 R255 R274 R278 R33	RES. MF, 1/8W, 1%, 2.49K	RN55D-2491F	TRW	4701-03-2491	12
R161 R213 R281 R283	RES. MF, 1/8W, 1%, 24.9K	RN55D-2492F	TRW	4701-03-2492	4
R187T	RES. MF, 1/8W, 1%, 27.4	RN55D-27R4F	TRW	4701-03-2749	1
R150 R177 R178 R43	RES. MF, 1/8W, 1%, 3.01K	RN55D-3011F	TRW	4701-03-3011	4
R131 R256	RES. MF, 1/8W, 1%, 301K	RN55D-3013F	TRW	4701-03-3013	2
R134 R67 R71 R88 R89	RES. MF, 1/8W, 1%, 316	RN55D-3160F	TRW	4701-03-3160	5
R101 R103 R109 R110 R119 R126 R130 R140 R192 R204 R253 R269 R272 R65 R68 R69 R72 R75 R76 R79 R82 R95	RES. MF, 1/8W, 1%, 33.2	RN55D-33R2F	TRW	4701-03-3329	22
R100T R105T	RES. MF, 1/8W, 1%, 3.57K	RN55D-3571F	TRW	4701-03-3571	2
R191 R202 R258 R80 R83	RES. MF, 1/8W, 1%, 3.65K	RN55D-3651F	TRW	4701-03-3651	5
R115 R193 R194 R195	RES. MF, 1/8W, 1%, 392	RN55D-3920F	TRW	4701-03-3920	4
R199 R42	RES. MF, 1/8W, 1%, 4.02K	RN55D-4021F	TRW	4701-03-4021	2
R106 R205 R206 R207	RES. MF, 1/8W, 1%, 464	RN55D-4640F	TRW	4701-03-4640	4

WAVETEK PARTS LIST | TITLE KIT, PRE WAVE LOAD 145-0556 | ASSEMBLY NO. 1208-00-1563 | PAGE 5 | REV AB

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
R154	RES. MF, 1/8W, 1%, 76.8K	RN55D-7682F	TRW	4701-03-7682	1
R125	RES. MF, 1/8W, 1%, 825	RN55D-8250F	TRW	4701-03-8250	1
R238 R249 R58	RES. MF, 1/8W, 1%, 8.25K	RN55D-8251F	TRW	4701-03-8251	3
R197T R208T R59	RES. MF, 1/8W, 1%, 82.5	RN55D-82R5F	TRW	4701-03-8259	3
R122 R228	RES. MF, 1/8W, 1%, 909	RN55D-9090F	TRW	4701-03-9090	2
R271	RES. MF, 1/8W, 1%, 90.9	RN55D-90R9F	TRW	4701-03-9099	1
R7	RES. MF, 1/4W, 1%, 1M	RN60D-1004F	TRW	4701-13-1004	1
R233	RES. MF, 1/4W, 1%, 121	RN60D-1210F	TRW	4701-13-1210	1
R229	RES. MF, 1/4W, 1%, 124	RN60D-1240F	TRW	4701-13-1240	1
R175	RES. MF, 1/4W, 1%, 49.9	RN60D-49R9F	TRW	4701-13-4999	1
R6T	RES. MF, 1/4W, 1%, 698K	RN60D-6983F	TRW	4701-13-6983	1
R224 R225 R226 R227	RES. MF, 1/2W, 1%, 49.9	RN65D-49R9F	TRW	4701-23-4999	4
R52 R53 R54	RES. MF, MIXED SET	4789-00-0043	IRC	4789-00-0043	1
R56	RES. MF, .6W, 1%, 10M	ML-1B1	CADDO	4799-00-0003	1
17	RES. 0 OHM JUMPER	JP02T68G	RCHM	4799-00-0087	9
CR3 CR33 CR4 CR5	DIODE, ZENER, 6.2V, 1N823	1N823A	MOT	4801-01-0823	4

WAVETEK PARTS LIST | TITLE KIT, PRE WAVE LOAD 145-0556 | ASSEMBLY NO. 1208-00-1563 | PAGE 7 | REV AB

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
R81 R84					
R211 R212	RES. MF, 1/8W, 1%, 1.1K	RN55D-1101F	TRW	4701-03-1101	2
R239 R240 R250 R251	RES. MF, 1/8W, 1%, 11K	RN55D-1102F	TRW	4701-03-1102	4
R96 R97	RES. MF, 1/8W, 1%, 1.21K	RN55D-1211F	TRW	4701-03-1211	2
R114 R241 R247 R66	RES. MF, 1/8W, 1%, 150	RN55D-1500F	TRW	4701-03-1500	4
R113 R176 R18 R198 R23 R267 R32 R36 R62 R63 R9	RES. MF, 1/8W, 1%, 1.5K	RN55D-1501F	TRW	4701-03-1501	11
R132 R163 R2	RES. MF, 1/8W, 1%, 15K	RN55D-1502F	TRW	4701-03-1502	3
R182	RES. MF, 1/8W, 1%, 150K	RN55D-1503F	TRW	4701-03-1503	1
R218 R219 R220 R221	RES. MF, 1/8W, 1%, 15	RN55D-15R0F	TRW	4701-03-1509	4
R263T	RES. MF, 1/8W, 1%, 17.4K	RN55D-1742F	TRW	4701-03-1742	1
R169	RES. MF, 1/8W, 1%, 1.78K	RN55D-1781F	TRW	4701-03-1781	1
R184	RES. MF, 1/8W, 1%, 1.96K	RN55D-1961F	TRW	4701-03-1961	1
R179	RES. MF, 1/8W, 1%, 200	RN55D-2000F	TRW	4701-03-2000	1
R1 R15 R183 R209 R31	RES. MF, 1/8W, 1%, 2K	RN55D-2001F	TRW	4701-03-2001	5
R143	RES. MF, 1/8W, 1%, 215	RN55D-2150F	TRW	4701-03-2150	1
R166 R170	RES. MF, 1/8W, 1%, 21.5	RN55D-21R5F	TRW	4701-03-2159	2

WAVETEK PARTS LIST | TITLE KIT, PRE WAVE LOAD 145-0556 | ASSEMBLY NO. 1208-00-1563 | PAGE 4 | REV AB

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
R201	RES. MF, 1/8W, 1%, 46.4K	RN55D-4642F	TRW	4701-03-4642	1
R5	RES. MF, 1.8W, 1%, 46.4	RN55D-46R4F	TRW	4701-03-4649	1
R34	RES. MF, 1/8W, 1%, 4.75K	RN55D-4751F	TRW	4701-03-4751	1
R231 R259	RES. MF, 1/8, 1%, 499	RN55D-4990F	TRW	4701-03-4990	2
R117 R14 R152 R20 R22 R232 R3 R37	RES. MF, 1/8W, 1%, 4.99K	RN55D-4991F	TRW	4701-03-4991	8
R157	RES. MF, 1/8W, 1%, 49.9K	RN55D-4992F	TRW	4701-03-4992	1
R85T R92T	RES. MF, 1/8W, 1%, 54.9	RN55D-54R9F	TRW	4701-03-5499	2
R235	RES. MF, 1/8W, 1%, 56.2	RN55D-56R2F	TRW	4701-03-5629	1
R148T R243 R246	RES. MF, 1/8W, 1%, 576	RN55D-5760F	TRW	4701-03-5760	3
R21 R40 R44 R86 R91	RES. MF, 1/8W, 1%, 604	RN55D-6040F	TRW	4701-03-6040	5
R215 R217 R234 R244 R260 R268 R273	RES. MF, 1/8W, 1%, 61.9	RN55D-61R9F	TRW	4701-03-6199	7
R264 R270	RES. MF, 1/8W, 1%, 681	RN55D-6810F	TRW	4701-03-6810	2
R46	RES. MF, 1/8W, 1%, 6.98K	RN55D-6981F	TRW	4701-03-6981	1
R135 R167 R190 R60 R70	RES. MF, 1/8W, 1%, 750	RN55D-7500F	TRW	4701-03-7500	5
R133 R136 R138 R160 R164 R261 R266 R77 R78	RES. MF, 1/8W, 1%, 7.5K	RN55D-7501F	TRW	4701-03-7501	9

WAVETEK PARTS LIST | TITLE KIT, PRE WAVE LOAD 145-0556 | ASSEMBLY NO. 1208-00-1563 | PAGE 6 | REV AB

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
CR16	DIODE, REFERENCE, LOW LEVEL, TEMP COMP	1N4581	MICRO	4801-01-4581	1
CR19 CR28 CR29 CR30 CR31 CR6 CR7 CR8 CR9	DIODE, ULTRA FAST	1N4244	T/CSF	4807-02-0777	9
CR1 CR10 CR11 CR14 CR15 CR17 CR18 CR20 CR21 CR22 CR23 CR24 CR25 CR27 CR32 CR34 CR35 CR36 CR37 CR46	DIODE 1N4148 COMPUTER, G/P, 75V, 200M A, SWITCHING	1N4148	FAIR	4807-02-6666	20
CR12 CR13	DIODE 5082-2811 SCHOTTKY, 15V, 20MA	5082-2811	HP	4809-02-2811	2
CR2 26	DIODE, M/PR, FD-777 QTY: 2: 4807-02-0777	4898-00-0004	KLC	4898-00-0004	1
CR38 39 40 41 42 43 44 45	DIODE, SET, 8-FD-777 QTY: 8: 4807-02-0777	4898-00-0010	KLC	4898-00-0010	1
Q42	TRANS 2N2219A NPN GENERAL PURPOSE TO-5	2N2219A	NSC	4901-02-2191	1
Q43	TRANS 2N2905A PNP GENERAL PURPOSE TO-5	2N2905A	NSC	4901-02-9051	1
Q12 Q36 Q50	TRANS, NPN, TO-92	2N3563	FAIR	4901-03-3630	3
Q15 Q16 Q37 Q49	TRANS, PNP, TO-92	MPS3640	MOT	4901-03-6400	4
Q39	TRANS	2N3866	MOT	4901-03-8660	1

WAVETEK PARTS LIST | TITLE KIT, PRE WAVE LOAD 145-0556 | ASSEMBLY NO. 1208-00-1563 | PAGE 8 | REV AB

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	CHECKED		TITLE: PARTS LIST PCA, GENERATOR
	PROJ. ENGR.		
	RELEASE APPROV.		
FINISH WAVETEK PROCESS	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ± DECIMALS XX ± .01 XXX ± .005 ANGLES ±		SIZE D · FSCM NO. 23338 · DWG. NO. 1100-00-0556 · REV AC
DO NOT SCALE DRAWING			SCALE · MODEL 145 · SHEET 2 OF 3

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
Q13 Q21 Q22 Q25 Q27 Q28 Q29 Q31 Q40 Q6	TRANS, GENERAL PURPOSE, NPN, TO-92	2N3903	NSC	4901-03-9030	10
Q10 Q11 Q14 Q17 Q19 Q23 Q24 Q26 Q30 Q32 Q33 Q34 Q4 Q41 Q46 Q47 Q51	TRANS, GENERAL PURPOSE, PNP, TO-92	2N3905	ITT	4901-03-9050	17
Q38	TRANS	2N5160-18	MOT	4901-05-1600	1
Q3	TRANS, P-CHANNEL JFETS	2N5460	MOT	4901-05-4600	1
Q5	TRANS, N-CHANNEL JFETS	2N5485	MOT	4901-05-4850	1
Q1	TRANS N-CHANNEL JFETS	2N5486	MOT	4901-05-4860	1
Q18 20	TRANS, M/PR, 2N3563 QTY: 2: 4901-03-3630	4998-00-0004	KLG	4998-00-0004	1
Q2 Q7	TRANS, SEL, 2N5462 QTY: 1: 4901-05-4620	4998-00-0008	KLG	4998-00-0008	2
Q8 9	TRANS, M/PR, 2N3485 QTY: 2: 4901-05-4850	4998-00-0009	KLG	4998-00-0009	1
IC4 IC5	OP AMP, LOWOFFSET/DRIFT JFET INPUT TIONAL AMPLI	LF411CN	NSC	7000-04-1100	2
Q35 Q48	TRANS, MONO, DUAL, NPN	LS312-52	LINSY	7000-08-1200	2
IC1 IC2 IC6	OP AMP, DUAL, HIGH GAIN, INTERNALLY COMP	MC1458P1	MOT	7000-14-5800	3

WAVETEK PARTS LIST	TITLE KIT, PRE WAVE LOAD 145-0556	ASSEMBLY NO. 1208-00-1563	REV AB
		PAGE 9	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY, SWITCH SW-1 145-0556	145-1565	WVTK	1202-00-1565	1
NONE	ASSY, SWITCH SW-2 145-0556	145-1566	WVTK	1202-00-1566	1
NONE	ASSY, SWITCH SW-3 145-0556	145-1567	WVTK	1202-00-1567	1
NONE	ASSY, SWITCH SW-4 145-0556	145-1568	WVTK	1202-00-1568	1
NONE	ASSY, SWITCH SW-5 145-0556	145-1569	WVTK	1202-00-1569	1

WAVETEK PARTS LIST	TITLE SUPER KIT	ASSEMBLY NO. 2300-0145-01	REV
		PAGE 1	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
IC9	DIFFERENTIAL AMP, DUAL HIGH FREQ	CA3049T	RCA	7000-30-4900	1
IC7 IC8	OP AMP, BIMOS MOSFET INPUT/BIPOLAR OUTPUT	CA3140S	RCA	7000-31-4001	2

WAVETEK PARTS LIST	TITLE KIT, PRE WAVE LOAD 145-0556	ASSEMBLY NO. 1208-00-1563	REV AB
		PAGE 10	

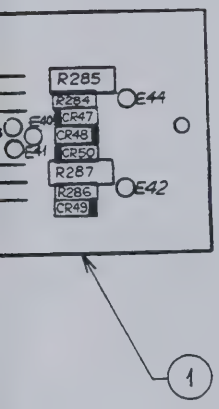
NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	CHECKED		TITLE: PARTS LIST PCA, GENERATOR
	PROJ. ENGR.		
FINISH WAVETEK PROCESS	RELEASE APPROV.		
DO NOT SCALE DRAWING	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES .XX ± .XXX ± ±		SIZE D; FSCM NO. 23338; DWG. NO. 1100-00-0556; REV AC; SCALE; MODEL 145; SHEET 3 OF 3

REV	ECN	BY	DATE	APP
A	4938	A.T.	2/24/86	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG, CURRENT LIMITER BOARD	0101-00-1008	WVTK	0101-00-1008	1
NONE	SCHEMATIC GENERATOR	0103-00-0556	WVTK	0103-00-0556	1
12	HEATSINK BRACKET	143-5083	WVTK	1400-01-5083	1
NONE	CURRENT LIMITER BD REF: SPEC 0008-00-0455 REV C	143-1008	WVTK	1700-00-1008	1
10	WASHER	5607-150	SESTM	2800-11-0015	2
7	WASHER, LOCK REG. S/S #4	MS 35338-135	CMRCL	2800-45-4000	2
16	LOCK WASHER, INTERNAL TOOTH, SS #4	MS 35333-70	CMRCL	2800-45-4001	1
6	SCREW PLPS PAN M/S 18-8 S/S 4-40X3/8	MS 51957-15	CMRCL	2800-48-4106	3
8	NUT, MACHINE SCREW, 18-8 SS, #4-40	NAS 671C4	CMRCL	2800-50-4100	3
R285 R287	RES, C, 1/2W, 5%, 4.7	RC-1/2-4R7J	STKPL	4700-25-0479	2
R284 R286	RES, MF, 1/8W, 1%, 100	RN55D-1000F	TRW	4701-03-1000	2
CR47 CR48 CR49 CR50	DIODE, ZENER, 10V	1N758A	FAIR	4801-01-0758	4
U13	VOLT REGULATOR, 3 TERMINAL ADJUSTABLE	LM317T	NSC	7000-03-1700	1

WAVETEK PARTS LIST	TITLE PCA, CURRENT LIMITER	ASSEMBLY NO. 1208-00-1008	REV B
		PAGE 1	

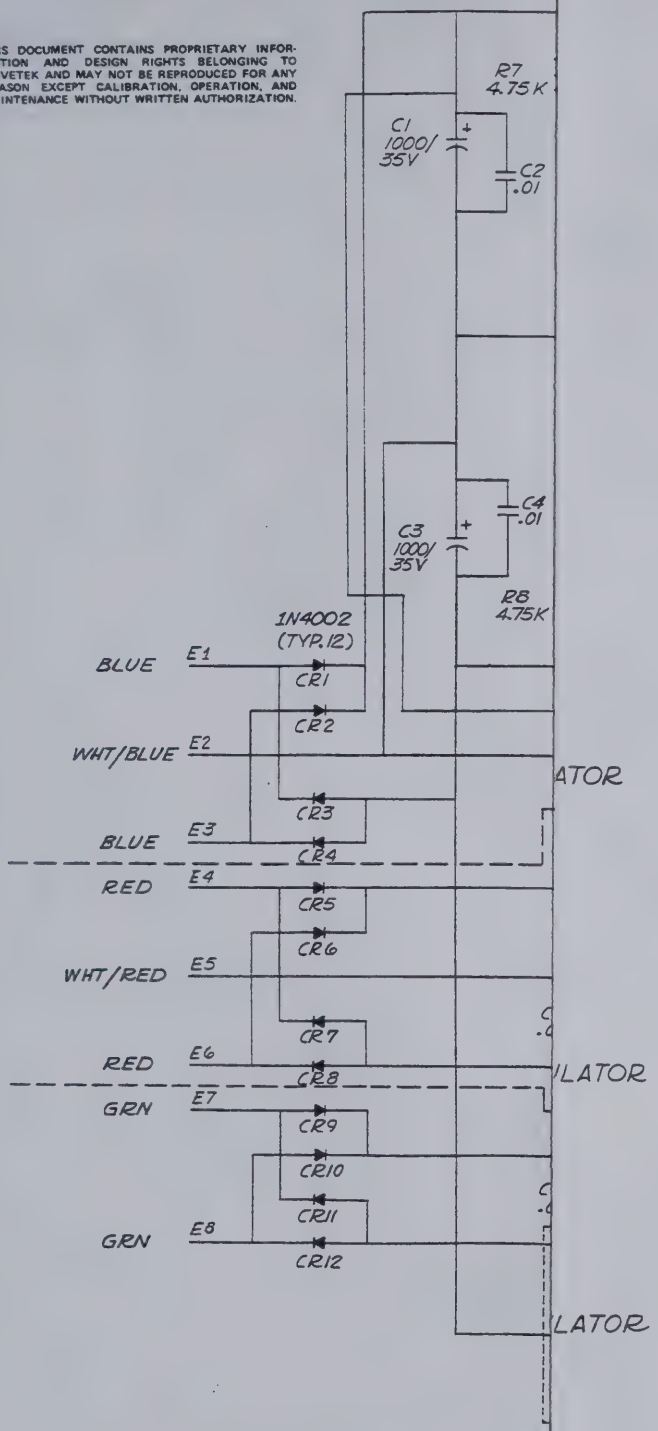


REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
	POS				
U12	VOLT REGULATOR	LM337T	NSC	7000-03-3700	1

WAVETEK PARTS LIST	TITLE PCA, CURRENT LIMITER	ASSEMBLY NO. 1208-00-1008	REV B
		PAGE 2	

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN RO FIFER	DATE	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	PROJ ENGR		TITLE ASSEMBLY, CURRENT LIMITER BD.
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1 .XX ±.030		
	DO NOT SCALE DWG	MODEL NO 145	DWG NO 0101-00-1008 REV A
	SCALE 2/1	CODE IDENT 23338	SHEET 1 OF 1

REV	ECN	BY	DATE	APP
B	ECN 1674	RO	6/8/82	
C	ECN 1800	JRM	9-5-8	
D	ECN 2090	DC	1-23-80	
E	ECN # LOST			
F	ECN 2481	LOU	11-7-80	
G	ECN*2801	DC	8-25-81	
H	3195, 3196	JA	5/20/82	
/	3618 (CL II)	JA	2/24/83	
J	ECN 4417	KA	9/16/84	
K	ECN 4674	KA	1/31/85	
L	4664	D.A.M.	7/22/85	A.R.T.
M	7554	IT	7/7/86	A.R.T.
N	89-410	BG	10/24/89	KA



LAST REF DES USED
C67
CR36
FB9
IC14
R72
SW4
Q21
F2

4. RESISTORS ARE 1/8W, 1%, MF
3. RESISTANCE IN OHMS
2. CAPACITANCE IN MICROFARADS
1. * = M.P. 10K RESISTORS

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 1-10-76
MATERIAL	PROJENGR	5/29/85
	RELEASE APPROV	3-23-77
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1° .XX ±.030	
	DO NOT SCALE DWG	
	SCALE	

WAVETEK SAN DIEGO • CALIFORNIA

TITLE
SCHEMATIC
TRIG/PULSE BOARD

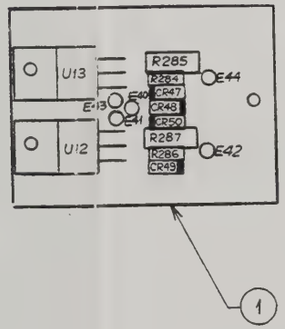
MODEL NO	DWG NO	REV
143/145	0103-00-0565	N
CODE IDENT 23338	SHEET 1 OF 2	

0103-00-0565 N

REV	ECN	BY	DATE	APP
A	4938	A.T.	2/24/86	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG, CURRENT LIMITER BOARD	0101-00-1008	WVTK	0101-00-1008	1
NONE	SCHEMATIC GENERATOR	0103-00-0556	WVTK	0103-00-0556	1
12	HEATSINK BRACKET	143-3083	WVTK	1400-01-3083	1
NONE	CURRENT LIMITER BD REF: SPEC 0008-00-0455 REV C	143-1008	WVTK	1700-00-1008	1
10	WASHER	3607-150	SESTM	2800-11-0015	2
7	WASHER, LOCK REG. S/S #4	MS 35338-135	CMRCL	2800-45-4000	2
16	LOCK WASHER, INTERNAL TOOTH, SS #4	MS 35333-70	CMRCL	2800-43-4001	1
6	SCREW PLPS PAN M/S 18-8 S/S 4-40X3/8	MS 51957-15	CMRCL	2800-48-4106	3
8	NUT, MACHINE SCREW, 18-8 SS, #4-40	NAS 671C4	CMRCL	2800-50-4100	3
R285 R287	RES, C, 1/2W, 5%, 4.7	RC-1/2-4R7J	STKPL	4700-25-0479	2
R284 R286	RES, MF, 1/8W, 1%, 100	RN55D-1000F	TRW	4701-03-1000	2
CR47 CR48 CR49 CR50	DIODE, ZENER, 10V	1N758A	FAIR	4801-01-0758	4
U13	VOLT REGULATOR, 3 TERMINAL ADJUSTABLE	LM317T	NSC	7000-03-1700	1

WAVETEK PARTS LIST | TITLE PCA. CURRENT LIMITER | ASSEMBLY NO. 1208-00-1008 | PAGE 1 | REV B



REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
	POS				
U12	VOLT REGULATOR	LM337T	NSC	7000-03-3700	1

WAVETEK PARTS LIST | TITLE PCA. CURRENT LIMITER | ASSEMBLY NO. 1208-00-1008 | PAGE 2 | REV B

1. SEE 0103-00-0556 FOR SCHEMATIC.

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES | MATERIAL | FINISH WAVETEK PROCESS

DRAWN RO FIFE 3/13/86 | PROJ ENGR | RELEASE APPROV | TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ±.010 ANGLES ±1 XX ±.030 | DO NOT SCALE DWG | SCALE 2/1

WAVETEK SAN DIEGO, CALIFORNIA

TITLE ASSEMBLY CURRENT LIMITER BD.

MODEL NO 145 | DWG NO 0101-00-1008 | REV A | CODE IDENT 23338 | SHEET 1 OF 1

REV	ECN	BY	DATE	APP
B	ECN 1674	RO	6-28-74	
C	ECN 1800	JRM	9-5-8	
D	ECN 2090	DC	1-23-80	
E	ECN #2[illegible]	[illegible]	[illegible]	
F	ECN 2481	LDC	11-7-83	
G	ECN*2801	DC	8-8-84	
H	3195, 3196	JRM	8/20/84	
I	3618 (CL II)	JRM	2/22/85	
J	ECN 4417	KA	8/16/85	
K	ECN 4674	KA	7/31/85	
L	4664	DAM	7/22/85	
M	7554	FT	7/7/86	
N	89-410	BG	10-24	KA

+15V E9 → P1-6

GND E10 → P1-2

-15V E11 → P1-7

E12 → LAMP F/P

E13 → LAMP F/P

± 15V REGULATOR

+24V E14 → P1-9

GND

-24V E15 → P1-8

± 24V REGULATOR

+5V E16 → P1-3

+5,-5.2V REGULATOR

-5.2V

145 ONLY

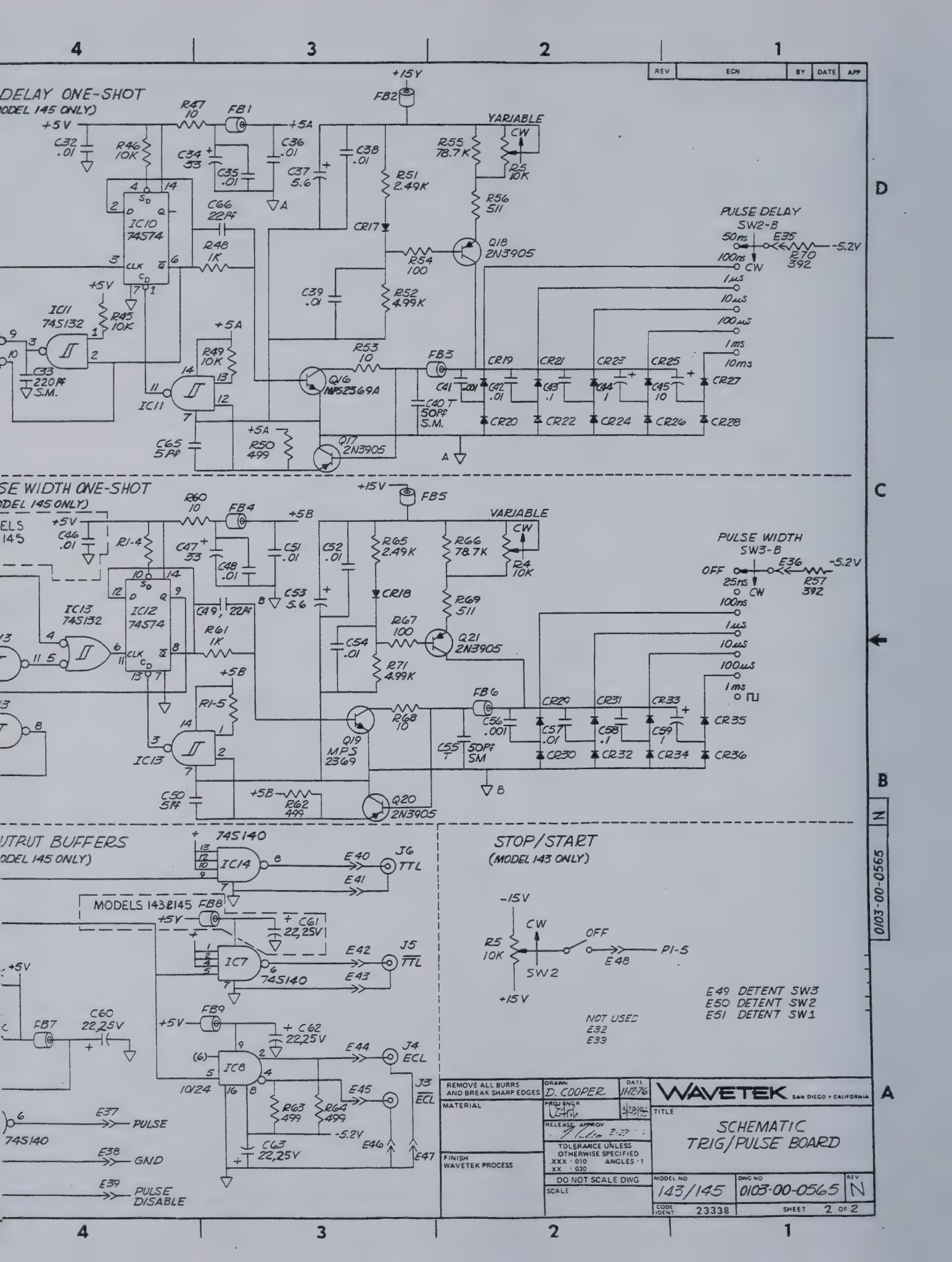
LAST REF DES USED
C67
CR36
FB9
IC14
RT2
SW4
Q21
F2

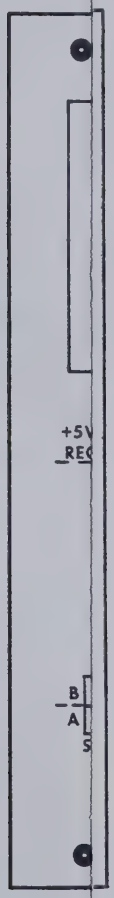
4. RESISTORS ARE 1/8W, 1%, MF
3. RESISTANCE IN OHMS
2. CAPACITANCE IN MICROFARADS
1. * = M.P. 10K RESISTORS

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 1-10-76	WAVETEK SAN DIEGO • CALIFORNIA
MATERIAL	PROJ ENGR		TITLE SCHEMATIC TRIG/PULSE BOARD
	RELEASE APPROV 3-23-77		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1° .XX ±.030		
	DO NOT SCALE DWG	MODEL NO 143/145	DWG NO 0103-00-0565 REV N
	SCALE	CODE IDENT 23338	SHEET 1 OF 2

0103-00-0565 N


4
3
2
1
REV
ECN
BY
DATE
APP
DELAY ONE-SHOT
(MODEL 145 ONLY)
+15V
FB2
FB1
R47 10
+5V
+5A
C32 .01
R46 10K
C34 33
C35 .01
C36 .01
C37 5.6
C38 .01
R51 2.49K
R55 78.7K
VARIABLE
CW
R5 10K
R56 511
IC10 74S74
C66 22Pf
R48 1K
CR17
Q18 2N3905
R54 100
C39 .01
R52 4.99K
PULSE DELAY
SW2-B
50ns
100ns
CW
E35
-5.2V
R270 392
1µs
10µs
100µs
1ms
10ms
IC11 74S132
R45 10K
R49 10K
R53 10
FB3
CR19
CR21
CR23
CR25
CR27
C41 .001
C42 .01
C43 .1
C44 1
C45 10
C33 220Pf S.M.
Q16 MPS2369A
C40 50Pf S.M.
CR20
CR22
CR24
CR26
CR28
C65 5Pf
R50 499
Q17 2N3905
A
SE WIDTH ONE-SHOT
(DDEL 145 ONLY)
ELS 145
+15V
FB5
R60 10
FB4
+5B
VARIABLE
C46 .01
R1-4
C47 33
C48 .01
C51 .01
C52 .01
R65 2.49K
R66 78.7K
R4 10K
C53 5.6
CR18
R69 511
PULSE WIDTH
SW3-B
OFF
25ns
CW
E36
-5.2V
R57 392
100ns
1µs
10µs
100µs
1ms
IC13 74S132
IC12 74S74
C49 22Pf
R61 1K
R67 100
Q21 2N3905
C54 .01
R71 4.99K
R1-5
FB6
CR29
CR31
CR33
CR35
C56 .001
C57 .01
C58 .1
C59 1
R68 10
Q19 MPS 2369
C55 50Pf SM
CR30
CR32
CR34
CR36
B
C50 5Pf
+5B
R62 499
Q20 2N3905
UTRUT BUFFERS
(ODEL 145 ONLY)
74S140
IC14
E40
J6
TTL
E41
MODELS 143&145 FB8
+5V
+ C61 22,25V
IC7
E42
J5
TTL
E43
74S140
FB7
C60 22,25V
FB9
+ C62 22,25V
E44
J4
ECL
IC8
10124
E45
J3
ECL
R63 499
R64 499
-5.2V
C63 22,25V
E46
E47
E37
PULSE
74S140
E38
GND
E39
PULSE DISABLE
STOP/START
(MODEL 143 ONLY)
-15V
CW
OFF
R5 10K
SW2
P1-5
E48
+15V
E49 DETENT SW3
E50 DETENT SW2
E51 DETENT SW1
NOT USED
E32
E33
N
0103-00-0565
REMOVE ALL BURRS AND BREAK SHARP EDGES
MATERIAL
FINISH WAVETEK PROCESS
DRAWN D. COOPER
DATE 1/12/76
PROJ ENGR
RELEASE APPROV
TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ± .010 ANGLES ± 1 XX ± .030
DO NOT SCALE DWG
SCALE
WAVETEK SAN DIEGO • CALIFORNIA
TITLE
SCHEMATIC TRIG/PULSE BOARD
MODEL NO 143/145
DWG NO 0103-00-0565
REV N
CODE IDENT 23338
SHEET 2 OF 2



MADE FROM 0100-00-0565-3G

OVE ALL BURRS BREAK SHARP EDGES	DRAWN		WAVETEK SAN DIEGO, CALIFORNIA
RIAL	PROJ ENGR		TITLE: PCA, TRIG/PULSE BD
	RELEASE APPROV		
H ETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030		
	DO NOT SCALE DWG	MODEL NO 145	DWG NO 1100-00-0565 REV
	SCALE	CODE IDENT 23338	SHEET OF

REV	ECN	BY	DATE	APP

TRIGGER SQUARING CIRCUIT

TRIGGER/PULSE LOGIC

PULSE DELAY ONE-SHOT (MODEL 145 ONLY)

PULSE WIDTH ONE-SHOT (MODEL 145 ONLY)

MODELS 143 & 145

PULSE OUTPUT BUFFERS (MODEL 145 ONLY)

SYNC OUT BUFFER

STOP/START (MODEL 143 ONLY)

GENERATOR MODE SW1-A: GATED / CONT. / TRIG

PULSE MODE SW-5: NORMAL / DOUBLE / DELAYED

PULSE WIDTH SW3-A: OFF

SW1-B: CW

SW-4 NOM.: MANUAL TRIGGER

PULSE DELAY SW2-B: 50ns / 100ns / 1µs / 10µs / 100µs / 1ms / 10ms / CW

PULSE WIDTH SW3-B: OFF / 25ns / 100ns / 1µs / 10µs / 100µs / 1ms / CW

STOP/START: -15V, R5 10K, CW, OFF, SW2, E48, PI-5, +15V

NOT USED: E32, E33

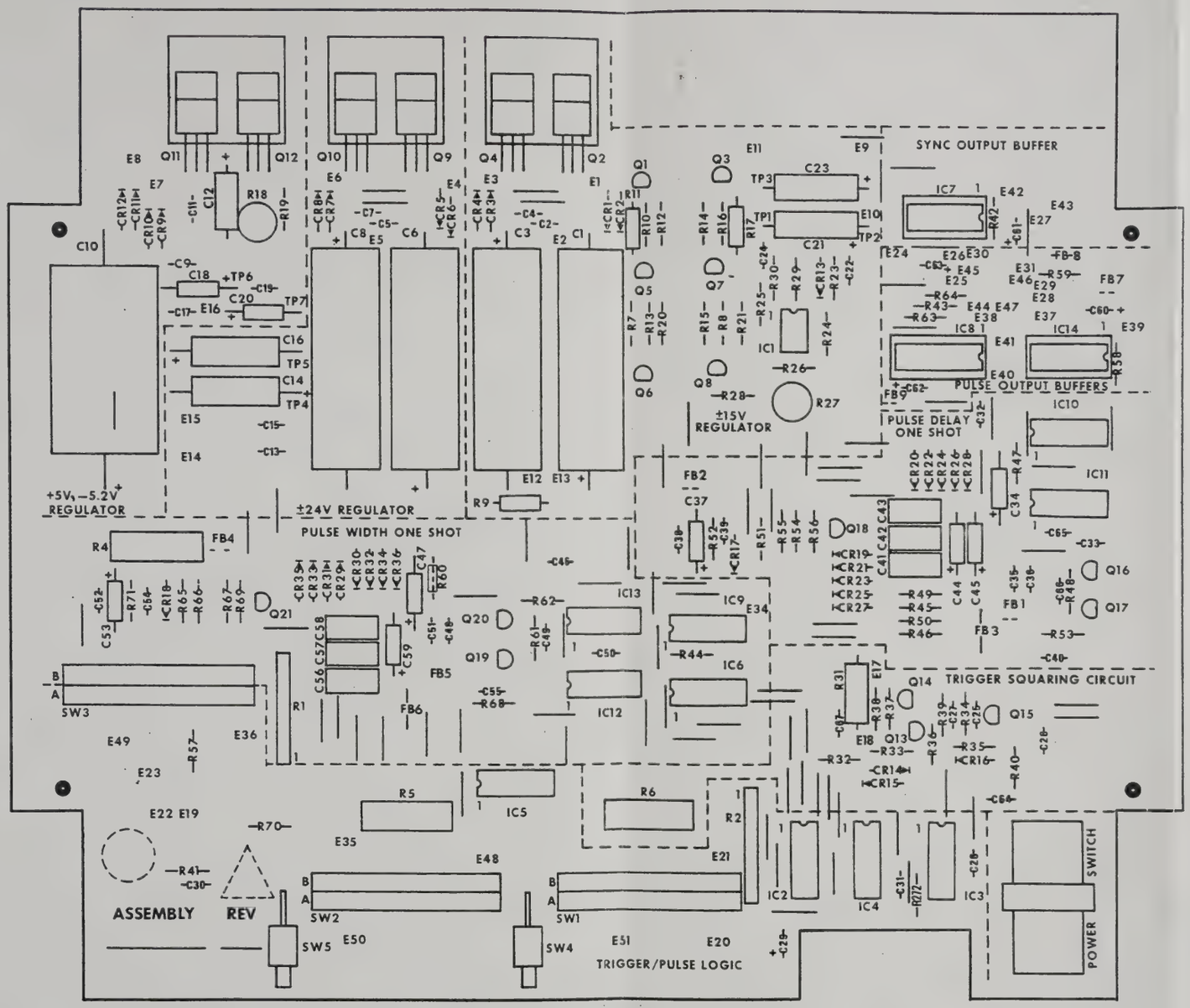
E49 DETENT SW3
E50 DETENT SW2
E51 DETENT SW1

6. **SELECTED COMPONENT
5. * NOMINAL VALUE CALLED OUT ON P/L.
4. ALL DIODES ARE FD6666
3. ALL RESISTORS ARE 1/8 W, 1%, MF
2. CAPACITANCE IN MICROFARADS
1. RESISTANCE IN OHMS

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 1/4/76	WAVETEK SAN DIEGO, CALIFORNIA	
MATERIAL	PROJ ENGR		TITLE: SCHEMATIC TRIG/PULSE BOARD	
FINISH WAVETEK PROCESS	RELEASE APPROV			
	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1 .XX ±.030			
	DO NOT SCALE DWG		MODEL NO 143/145	DWG NO 0103-00-0565 REV N
	SCALE		CODE IDENT 23338	SHEET 2 OF 2

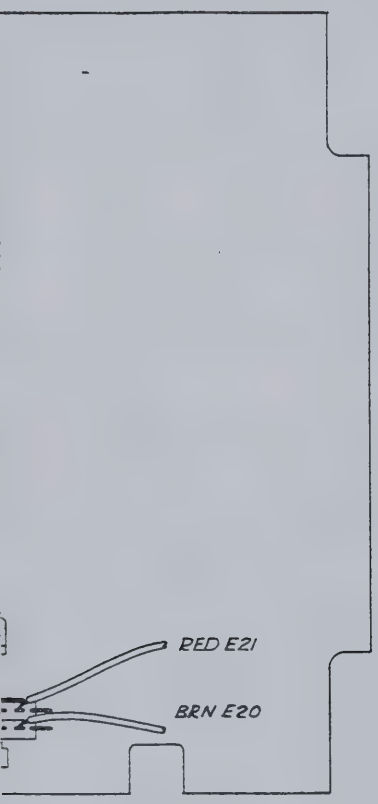
0103-00-0565 N

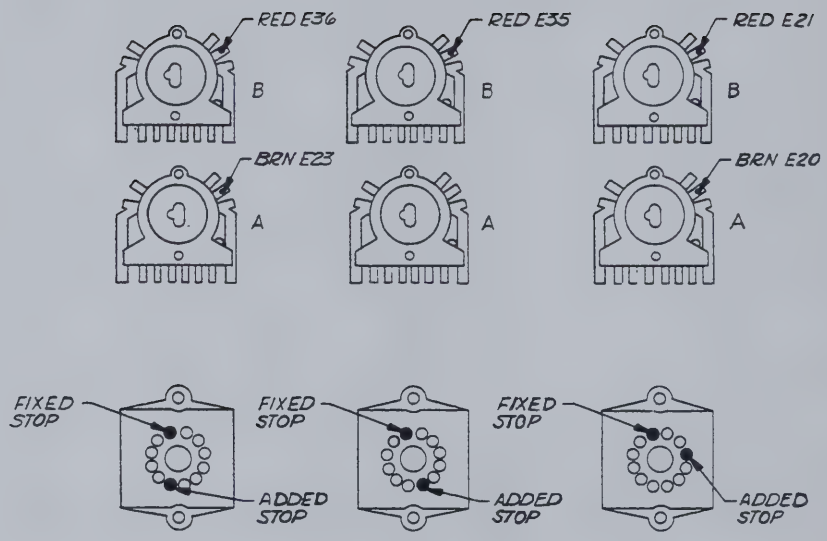


MADE FROM 0100-00-0565-3G

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN		WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	PROJ ENGR		TITLE: PCA, TRIG/PULSE BD
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030		
	DO NOT SCALE DWG		MODEL NO 145 / DWG NO 1100-00-0565 / REV
	SCALE		CODE IDENT 23338 / SHEET OF

REV	ECN	BY	DATE	APP





DETENT SHOWN FROM FRONT VIEW IN FULL COUNTER CLOCKWISE POSITION

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 4-27-77	WAVETEK SAN DIEGO • CALIFORNIA
MATERIAL	PROJECT		TITLE ASSEMBLY TRIG/PULSE BD.
	RELEASE - APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030		
	DO NOT SCALE DWG	MODEL NO 145	DWG NO 0101-00-0565 REV N
	SCALE	CODE IDENT 23338	SHEET 2 OF 2

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO
NONE	ASSY DRWG TRIG/PULSE	0101-00-0565
NONE	SCHEMATIC TRIG/PULSE	0103-00-0565
NONE	KIT, PRE WAVE LOAD 145-0565	145-1557
NONE	BRKT, HEAT SINK	182-308
NONE	SUPER KIT	2500-0145-02
NONE	SUPER KIT	2500-0145-03
NONE	STANDOFF 1.750 H, .250 HEX4-40	P-609-M03-F05-440
1	WASHER	5607-150
5	WASHER, LOCK REG, S/S 04	MS 35338-135
37	LOCK WASHER, INTERNAL TOOTH, SS 04	MS 35333-70
36	SCREW PLPS PAN H/S 18-8 S/S 4-40X1/4	MS 51957-13
4	MS, PH, PHLPS, 4-40 X 1/2, SS 18-8 SS, 04-40X1/2	MS 51957-17
7	NUT, MACHINE SCREW, 18-8 SS, 04-40	NAS 671C4

T DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
, TRIM, 1K	91AR1K	BECK	4600-01-0209	1
, TRIM, 20	91AR20	BECK	4600-02-0000	1
, C, 1/2W, 5%, 4.7	RC-1/2-4R7J	STKPL	4700-25-0479	2
, C, 1/2W, 5%, 220	RC-1/2-221J	STKPL	4700-25-2200	1
, C, 1W, 10%, 10K	RC32GF103J	AB	4700-35-1002	1
, MF, 1/8W, 1%, 100	RN55D-1000F	TRW	4701-03-1000	4
, MF, 1/8W, 1%, 1K	RN55D-1001F	TRW	4701-03-1001	6
, MF, 1/8W, 1%, 10K	RN55D-1002F	TRW	4701-03-1002	3
, MF, 1/8W, 1%, 10	5043ED10R100F	MEPCO	4701-03-1009	4
, MF, 1/8W, 1%, 1.5K	RN55D-1501F	TRW	4701-03-1501	1
, MF, 1/8W, 1%, 15K	RN55D-1502F	TRW	4701-03-1502	1
, MF, 1/8W, 1%, 1.78K	RN55D-1781F	TRW	4701-03-1781	1
, MF, 1/8W, 1%, 200	RN55D-2000F	TRW	4701-03-2000	1
, MF, 1/8W, 1%, 2.21K	RN55D-2211F	TRW	4701-03-2211	4
, MF, 1/8W, 1%, 2.37K	RN55D-2371F	TRW	4701-03-2371	1
, MF, 1/8W, 1%, 2.49K	RN55D-2491F	TRW	4701-03-2491	2
, MF, 1/8W, 1%, 24.9K	RN55D-2492F	TRW	4701-03-2492	1

WAVETEK PARTS LIST	TITLE PCA, TRIGGER/PULSE	ASSEMBL

WAVE LOAD 145-0565 | ASSEMBLY NO. 1209-00-1557 | REV U

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO
2	INSULATOR(TO-220)	60-11-8302-1674
R26	RES, MF, 1/8W, 1%, 8.06K	RN55D-8061F
Q4	TRANS, NPN, TO-220	TIP-29
Q2	TRANS, PNP, TO-220	TIP30
SW5	SWITCH, TOGGLE	7103 P3Y9AV2Q
SW4	SWITCH, TOGGLE	7108 P3Y9AV2Q
U9	VOLT REGULATOR, POSITIVE	7824
U12	VOLT REGULATOR, NEGATIVE	MC7905CP
U10	VOLT REGULATOR, NEGATIVE	7924
U11	VOLT REGULATOR	MA7805UC
"IC8	XLATR, 4 TTL-ECL, ECL	MC10124P
IC14 IC7	LINE DRIVERS, DUAL 4 INPUT POSITIVE-NAND 50 OHM	748140

T DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
, MF, 1/8W, 1%, 301	RN55D-3010F	TRW	4701-03-3010	1
, MF, 1/8W, 1%, 392	RN55D-3920F	TRW	4701-03-3920	2
, MF, 1/8W, 1%, 3.92K	RN55D-3921F	TRW	4701-03-3921	1
, MF, 1/8W, 1%, 432	RN55D-4320F	TRW	4701-03-4320	1
, MF, 1/8W, 1%, 4.75K	RN55D-4751F	TRW	4701-03-4751	2
, MF, 1/8, 1%, 499	RN55D-4990F	TRW	4701-03-4990	7
, MF, 1/8W, 1%, 4.99K	RN55D-4991F	TRW	4701-03-4991	7
, MF, 1/8W, 1%, 511	RN55D-5110F	TRW	4701-03-5110	2
, MF, 1/8W, 1%, 5.76K	RN55D-5761F	TRW	4701-03-5761	1
, MF, 1/8W, 1%, 6.98K	RN55D-6981F	TRW	4701-03-6981	1
, MF, 1/8W, 1%, 78.7K	RN55D-7872F	TRW	4701-03-7872	2
NETWORK 10K 2% IN SIP BUSS	4310R-101-103	BOURN	4770-00-0008	2
, SET, 2-10K, 1/8W : 2: 4701-03-1002	4789-00-0019	IRC	4789-00-0019	1
, 0 OHM JUMPER	JP02T6B0	ROHM	4799-00-0087	9
IDE, REFERENCE, LOW EL, TEMP COMP	1N4581	MICRO	4801-01-4581	1

WAVETEK PARTS LIST	TITLE PCA, TRIGGER/PULSE	ASSEMBL

WAVE LOAD 145-0565 | ASSEMBLY NO. 1209-00-1557 | REV U

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES
MATERIAL
FINISH PER WAVETEK PROCESS
DO NOT SCALE DRAWING

		DATE
DRAWN		
CHECKED		
PROJ. ENGR.		
RELEASE APPROV.		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

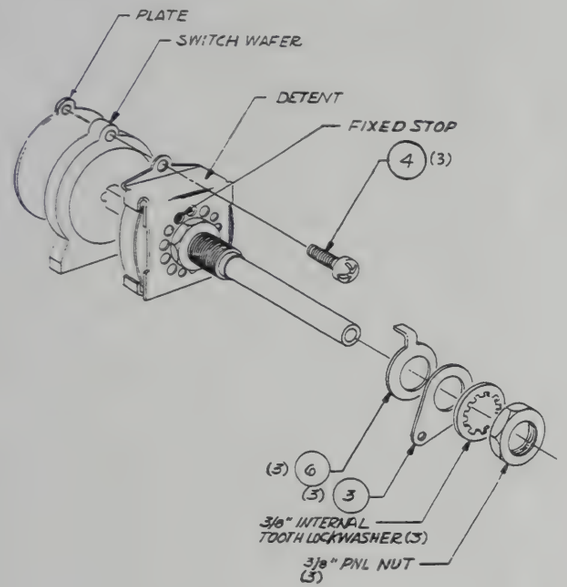
WAVETEK SAN DIEGO, CALIFORNIA

TITLE
PARTS LIST
PCA, TRIGGER/PULSE

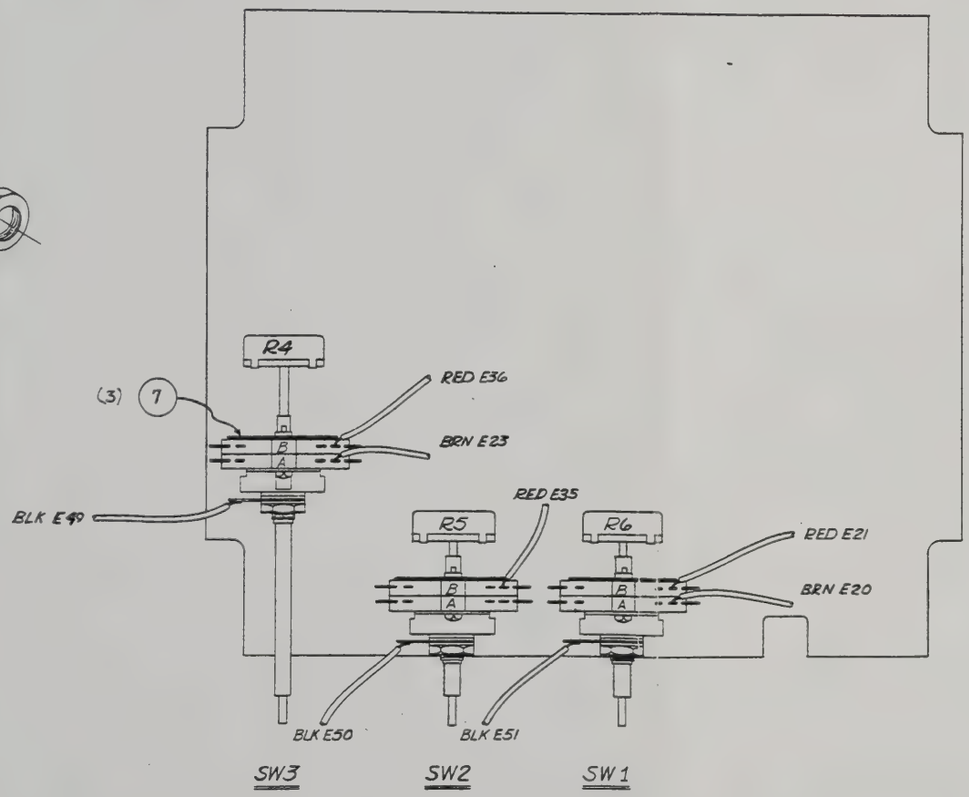
SIZE	PSCM NO.	DWG. NO.	REV
D	23338	1100-00-0565	U

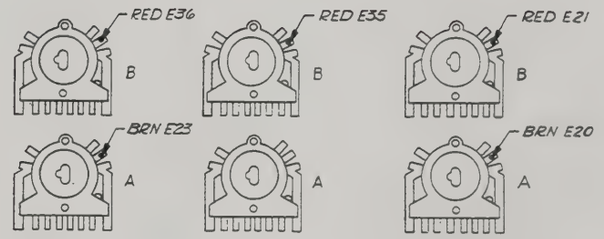
SCALE | MODEL 145 | SHEET 1 OF 2

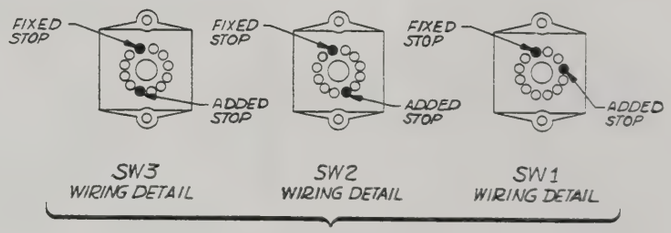
REV	ECN	BY	DATE	APP



TYPICAL HARDWARE STACK-UP







DETENT SHOWN FROM FRONT VIEW IN FULL COUNTER CLOCKWISE POSITION

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D. COOPER	DATE 12777	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	PROJ ENGR		TITLE ASSEMBLY TRIG/PULSE BD.
FINISH WAVETEK PROCESS	RELEASE APPROV		
	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030		
	DO NOT SCALE DWG		MODEL NO 145
	SCALE		DWG NO 0101-00-0565 REV N
			CODE IDENT 23338 SHEET 2 OF 2

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG TRIG/PULSE	0101-00-0565	WVTK	0101-00-0565	1
NONE	SCHEMATIC TRIG/PULSE	0103-00-0565	WVTK	0103-00-0565	1
NONE	KIT, PRE WAVE LOAD 145-0565	145-1557	WVTK	1208-00-1557	1
NONE	BRKT, HEAT SINK	182-308	WVTK	1400-00-5143	3
NONE	SUPER KIT	2300-0145-02	WVTK	2300-0145-02	1
NONE	SUPER KIT	2300-0145-03	WVTK	2300-0145-03	1
NONE	STANDOFF 1.750 H. .250 HEX4-40	P-609-M03-FDS-440	UNICP	2800-02-0016	4
1	WASHER	5607-130	BEBTH	2800-11-0015	6
5	WASHER, LOCK REG. S/S 04	MS 35338-135	CHRCL	2800-45-4000	6
37	LOCK WASHER, INTERNAL TOOTH. SS 04	MS 35333-70	CHRCL	2800-45-4001	4
36	SCREW PLPS PAN M/S 18-8 S/S 4-40X1/4	MS 51957-13	CHRCL	2800-48-4104	4
4	MS. PH. PHLPS. 4-40 X 1/2, SS 18-8 SS. 04-40X1/2	MS 51957-17	CHRCL	2800-48-4108	6
7	NUT, MACHINE SCREW. 18-8 SS. 04-40	NAS 671C4	CHRCL	2800-50-4100	6

WAVETEK PARTS LIST — TITLE: PCA, TRIGGER/PULSE — ASSEMBLY NO. 1100-00-0565 — PAGE 1 — REV U

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG TRIG/PULSE	0101-00-0565	WVTK	0101-00-0565	1
NONE	SCHEMATIC TRIG/PULSE	0103-00-0565	WVTK	0103-00-0565	1
C50 C65	CAP, CER DISK, 5PF, 1KV, 10%	0311-00018	WVTK	1500-00-5011	2
C27	CAP, CER, 10PF, 1KV	DD-100	CRL	1500-01-0011	1
C11 C17 C19 C2 C22 C24 C25 C26 C32 C35 C36 C38 C39 C4 C46 C48 C5 C51 C52 C54 C64 C7 C9	CAP CER MON .01MF 50V, AXIAL	CAC03Z5U103Z100A	CORNG	1500-01-0310	23
C13 C15	CAP, CER, MON. .1MF, 50V, AXIAL	CAC03Z5U104Z050A	CORNG	1500-01-0405	2
C50 C49 C66	CAP, CER, 22PF, 1KV	DD-220	CRL	1500-02-2011	3
C67	CAP, CER, 33PF, 1KV	DD-330	CRL	1500-03-3011	1
C31T C33	CAP, MICA, 220PF, 500V, RADIAL	DM15-221J	ARCO	1500-12-2100	2
C40T C95T	CAP, MICA, 30PF, 300V	DM15-300J	ARCO	1500-15-0000	2
C28T	CAP, MICA, 560PF, 300V	DM15-561J	ARCO	1500-15-6100	1
C21 C23	CAP, ELECT, 100MF, 16V	ECE31CU101	PANAS	1500-31-0101	2
C1 C3	CAP, ELECT, 1000MF, 35V	39D108003SGL6	SPRAG	1500-31-0212	2
C29 C60 C61 C62 C63	CAP, ELECT, 22MF, 25V, RA	SRA25VB22RMAX7LL	UNICN	1500-32-2002	5

WAVETEK PARTS LIST — TITLE: KIT, PRE WAVE LOAD 145-0565 — ASSEMBLY NO. 1208-00-1557 — PAGE 1 — REV U

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
R27	POT, TRIM, 1K	91AR1K	BECK	4600-01-0209	1
R18	POT, TRIM, 20	91AR20	BECK	4600-02-0000	1
R11 R17	RES, C, 1/2W, 5%, 4.7	RC-1/2-4R7J	STKPL	4700-25-0479	2
R9	RES, C, 1/2W, 5%, 220	RC-1/2-221J	STKPL	4700-25-2200	1
R31	RES, C, 1W, 10%, 10K	RC32GF103J	AB	4700-35-1002	1
R33 R41 R54 R67	RES, MF, 1/8W, 1%, 100	RN55D-1000F	TRW	4701-03-1000	4
R13 R15 R20 R21 R48 R61	RES, MF, 1/8W, 1%, 1K	RN55D-1001F	TRW	4701-03-1001	6
R45 R46 R49	RES, MF, 1/8W, 1%, 10K	RN55D-1002F	TRW	4701-03-1002	3
R47 R53 R60 R68	RES, MF, 1/8W, 1%, 10	5043ED10R100F	MEPCO	4701-03-1009	4
R39	RES, MF, 1/8W, 1%, 1.5K	RN55D-1501F	TRW	4701-03-1501	1
R32	RES, MF, 1/8W, 1%, 15K	RN55D-1502F	TRW	4701-03-1502	1
R35	RES, MF, 1/8W, 1%, 1.78K	RN55D-17811F	TRW	4701-03-1781	1
R272	RES, MF, 1/8W, 1%, 200	RN55D-2000F	TRW	4701-03-2000	1
R42 R44 R58 R59	RES, MF, 1/8W, 1%, 2.21K	RN55D-2211F	TRW	4701-03-2211	4
R23	RES, MF, 1/8W, 1%, 2.37K	RN55D-2371F	TRW	4701-03-2371	1
R51 R65	RES, MF, 1/8W, 1%, 2.49K	RN55D-2491F	TRW	4701-03-2491	2
R37	RES, MF, 1/8W, 1%, 24.9K	RN55D-2492F	TRW	4701-03-2492	1

WAVETEK PARTS LIST — TITLE: KIT, PRE WAVE LOAD 145-0565 — ASSEMBLY NO. 1208-00-1557 — PAGE 3 — REV U

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
2	INSULATOR(TO-220)	60-11-6302-1674	CHOMR	3100-00-0010	6
R26	RES, MF, 1/8W, 1%, 8.06K	RN55D-8061F	TRW	4701-03-8061	1
Q4	TRANS, NPN, TO-220	TIP-29	MOT	4902-00-0290	1
Q2	TRANS, PNP, TO-220	TIP30	TI	4902-00-0300	1
SW5	SWITCH, TOGGLE	7103 P3Y9AV2Q	C&K	5106-00-0019	1
SW4	SWITCH, TOGGLE	7108 P3Y9AV2Q	C&K	5106-00-0020	1
Q9	VOLT REGULATOR, POSITIVE	7824	FAIR	7000-78-2400	1
Q12	VOLT REGULATOR, NEGATIVE	MC7905CP	MOT	7000-79-0500	1
Q10	VOLT REGULATOR, NEGATIVE	7924	FAIR	7000-79-2400	1
Q11	VOLT REGULATOR	MA7805UC	FAIR	8000-78-0500	1
*IC8	XLATR, 4 TTL-ECL, ECL	MC10124P	MOT	8001-01-2400	1
IC14 IC7	LINE DRIVERS, DUAL 4 INPUT POSITIVE-NAND 50 OHM	748140	TI	8007-41-4001	2

WAVETEK PARTS LIST — TITLE: PCA, TRIGGER/PULSE — ASSEMBLY NO. 1100-00-0565 — PAGE 2 — REV U

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
	DIAL				
C10	CAP, ELECT, 4000MF, 15V	TC8402U015M1L	MAL	1500-34-0211	1
C14 C16	CAP, ELECT, 50MF, 50V	500D5048050DD7	SPRAG	1500-35-0003	2
C6 C8	CAP, ELECT, 500MF, 30V	39D507B050BL4	SPRAG	1500-35-0103	2
C41 C56	CAP, MYLAR, .001MF100V	225P10291MD3	SPRAG	1500-41-0204	2
C42 C57	CAP, MYLAR, .01MF, 100V	225P10391MD3	SPRAG	1500-41-0314	2
C43 C58	CAP, MYLAR, .1MF, 100V	225P10491MD3	SPRAG	1500-41-0444	2
C44 C59	CAP, TANT, 1MF, 35V	150D105X9035A2	SPRAG	1500-71-0502	2
C45	CAP, TANT, 10MF, 20V	150D106X9020B2	SPRAG	1500-71-0601	1
C18 C20 C34 C47	CAP, TANT, 33MF, 10V	150D336X9010B2	SPRAG	1500-73-3401	4
C12 C37 C53	CAP, TANT, 5.6MF, 35V	150D565X9035B2	SPRAG	1500-73-6302	3
NONE	TRIGGER/PULSE REF: SPEC 0008-00-0455 REV C	145-0565	WVTK	1700-00-0565	1
NONE	BKT, IC, 16PIN	DILB16P-108T	BURND	2100-03-0028	1
NONE	BKT, IC, 14 PIN	DILB14P-108T	BURND	2100-03-0066	2
FB1 FB2 FB3 FB4 FB5 FB6 FB7 FB8 FB9	FERRITE BEAD	56-590-65/3B	FERRX	3100-00-0001	9

WAVETEK PARTS LIST — TITLE: KIT, PRE WAVE LOAD 145-0565 — ASSEMBLY NO. 1208-00-1557 — PAGE 2 — REV U

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
R19	RES, MF, 1/8W, 1%, 301	RN55D-3010F	TRW	4701-03-3010	1
R57 R70	RES, MF, 1/8W, 1%, 392	RN55D-3920F	TRW	4701-03-3920	2
R24	RES, MF, 1/8W, 1%, 3.92K	RN55D-3921F	TRW	4701-03-3921	1
R38T	RES, MF, 1/8W, 1%, 432	RN55D-4320F	TRW	4701-03-4320	1
R7 R8	RES, MF, 1/8W, 1%, 4.75K	RN55D-4751F	TRW	4701-03-4751	2
R10 R16 R43 R50 R62 R63 R64	RES, MF, 1/8, 1%, 499	RN55D-4990F	TRW	4701-03-4990	7
R12 R14 R23 R34 R40 R52 R71	RES, MF, 1/8W, 1%, 4.99K	RN55D-4991F	TRW	4701-03-4991	7
R56 R69	RES, MF, 1/8W, 1%, 511	RN55D-5110F	TRW	4701-03-5110	2
R28	RES, MF, 1/8W, 1%, 5.76K	RN55D-5761F	TRW	4701-03-5761	1
R36	RES, MF, 1/8W, 1%, 6.98K	RN55D-6981F	TRW	4701-03-6981	1
R55 R66	RES, MF, 1/8W, 1%, 78.7K	RN55D-7872F	TRW	4701-03-7872	2
R1 R2	RES NETWORK, 10K 2% 10 PIN SIP BUSS	4310R-101-103	BOURN	4770-00-0008	2
R29 30	RES, SET, 2-10K, 1/8W QTY: 2: 4701-03-1002	4789-2E-0019	IRC	4789-00-0019	1
8	RES, 0 OHM JUMPER	JP02T600	ROHM	4799-00-0087	9
CR13	DIODE, REFERENCE, LOW LEVEL TEMP COMP	1N4581	MICRO	4801-01-4581	1

WAVETEK PARTS LIST — TITLE: KIT, PRE WAVE LOAD 145-0565 — ASSEMBLY NO. 1208-00-1557 — PAGE 4 — REV U

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS & SHARP EDGES — DRAWN — DATE — CHECKED — PROJ. ENGR. — RELEASE APPROV. — FINISH PER WAVETEK PROCESS — UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ± .XX ± .XXX ± ± — DO NOT SCALE DRAWING

WAVETEK SAN DIEGO, CALIFORNIA

TITLE: PARTS LIST PCA, TRIGGER/PULSE

SIZE D | PRCN NO. 23338 | DWG. NO. 1100-00-0565 | REV U

SCALE | MODEL 145 | SHEET 1 OF 2

REV	ECO	BY	DATE	APP

DR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
	FAIR	4801-02-0001	12
	FAIR	4807-02-4444	23
	NSC	4901-03-9030	6
	ITT	4901-03-9050	7
	MOT	4902-02-3490	2
	MOT	7000-14-3800	1
	TI	8000-74-0000	1
	TI	8000-74-0010	1
	TI	8000-74-0700	1
	TI	8000-74-0810	1

ASSEMBLY NO. 1208-00-1957	REV U
PAGE 5	

REFERENCE DESIGNATORS	PART DESCRIPTION	DRIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	KIT, HARNESS & WIRE -145	145-1562	WVTK	1207-00-1362	1
NONE	ASSY. LAMP 143-145	143-145-1960	WVTK	1207-00-1960	1
NONE	ASSY. COAX 143-143-0385	143-145-1962	WVTK	1207-00-1962	1
NONE	ASSY. COAX 143-145-0385	143-145-1963	WVTK	1207-00-1963	1
NONE	ASSY. COAX 145-0345	145-1978	WVTK	1207-00-1978	1
NONE	ASSY. COAX 145-0345	145-1979	WVTK	1207-00-1979	1
NONE	ASSY. COAX 145-0345	145-1980	WVTK	1207-00-1980	1
NONE	ASSY. COAX 145-0345	145-1981	WVTK	1207-00-1981	1
NONE	ASSY. COAX 145-0345	145-1982	WVTK	1207-00-1982	1
NONE	ASSY. MOLEX CONNECTOR HARNESS 145-0345	145-1983	WVTK	1207-00-1983	1

WAVETEK PARTS LIST	TITLE SUPER KIT	ASSEMBLY NO. 2300-0145-02	REV
		PAGE 1	

DR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
	TI	8000-74-7401	2
	TI	8000-74-7410	1
	TI	8000-74-8611	1
	TI	8007-41-3201	2

ASSEMBLY NO. 1208-00-1957	REV U
PAGE 6	

REFERENCE DESIGNATORS	PART DESCRIPTION	DRIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY. SWITCH SW-1 145-0345	145-1559	WVTK	1202-00-1359	1
NONE	ASSY. SWITCH SW-2 145-0345	145-1560	WVTK	1202-00-1360	1
NONE	ASSY. SWITCH SW-3 145-0345	145-1561	WVTK	1202-00-1361	1

WAVETEK PARTS LIST	TITLE SUPER KIT	ASSEMBLY NO. 2300-0145-03	REV
		PAGE 1	

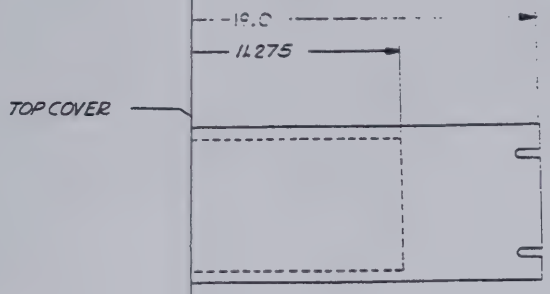
REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE
MATERIAL	CHECKED	
	PROJ. ENGR.	
FINISH: WAVETEK PROCESS	RELEASE DRAWING	
DO NOT SCALE DRAWING	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES .XX ± .XXX ± ±	

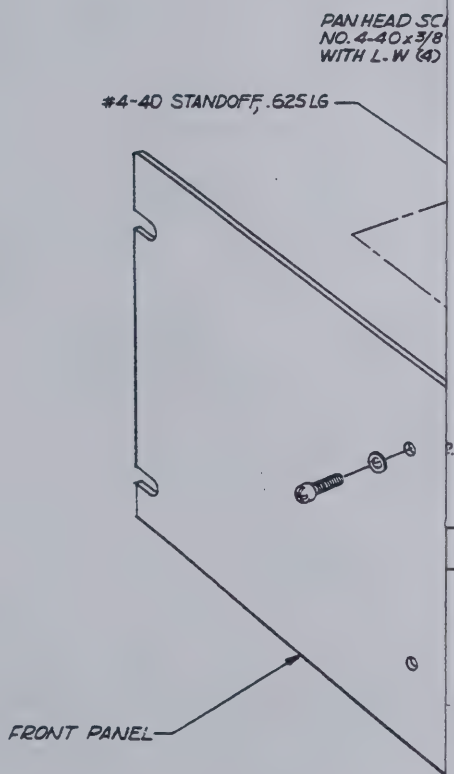
WAVETEK

TITLE
PARTS LIST
PCA, TRIGGER/PULSE

SIZE	FSCM NO.	DWG. NO.	REV
D	23338	1100-00-0565	U
SCALE		MODEL 145	SHEET 2 OF 2

REV	ECN	BY	DATE	APP
A	4073	[illegible]	[illegible]	
E	4610	[illegible]	[illegible]	





PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO	QTY/PT
COVER, HALF, R/M	183-5412	WVTK	1400-00-5412	2
PL, SIDE, R/M, RH	183-5443	WVTK	1400-00-5443	1
PL, SIDE, R/M, LH	183-5633	WVTK	1400-00-5633	1
FRONT PANEL R/M	145-7600	WVTK	1400-00-7600	1
INSULATOR, R/M SIDE PANEL	1400-01-5651	WVTK	1400-01-5651	1
STANDOFF	013-003-9	WVTK	1420-00-0093	4
SPEEDNUT, TYPE/U	C8091-632-4	TINN	2800-09-0004	8
WASHER, SHOULDER	2661	SMITH	2800-27-0002	4

	ASSEMBLY NO.	REV
M ASSY-MODEL 143 STYLE 1	1101-00-2894	

PAGE 1

0102-00-0621 B.

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D COOPER	DATE 4-29-7	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL —	PROJ ENGR		TITLE: ASSEMBLY RACK MOUNT
	RELEASE APPROV		
FINISH WAVETEK PROCESS —	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1° XX ± .030		
	DO NOT SCALE DWG	MODEL NO 143/145	DWG NO 0102-00-0621 REV B
	SCALE NONE	CODE IDENT 23338	SHEET 1 OF 1

REF	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
CR1 CR10 CR11 CR12 CR2 CR3 CR4 CR5 CR6 CR7 CR8 CR9	DIODE, 1N4002 GEN PURPOSE RECT. 100V, 1A	1N4002	FAIR	4801-02-0001	12
CR14 CR15 CR16 CR17 CR18 CR19 CR20 CR21 CR22 CR23 CR24 CR25 CR26 CR27 CR28 CR29 CR30 CR31 CR32 CR33 CR34 CR35 CR36	DIODE 1N4148 COMPUTER, G/P, 75V, 200M A, SWITCHING	1N4148	FAIR	4807-02-4444	23
Q1 Q13 Q14 Q15 Q5 Q6	TRANS. GENERAL PURPOSE, NPN, TO-92	2N3903	NEC	4901-03-9030	6
Q17 Q18 Q20 Q21 Q3 Q7 Q8	TRANS. GENERAL PURPOSE, PNP, TO-92	2N3905	ITT	4901-03-9090	7
Q16 Q19	TRANS. NPN, TO-92	MPS2369	MOT	4902-02-3690	2
IC1	SP AMP, DUAL, HIGH GAIN, INTERNALLY COMP	MC1458P1	MOT	7000-14-5800	1
IC3	GATE, NAND, QUAD 2-INPUT	7400	TI	8000-74-0000	1
IC6	GATE, NAND, QUAD 2-INP, TTL	SN74LS03N	TI	8000-74-0010	1
IC5	BUF/DRIVERS, HEX, W/OC HIGH VOLTAGE OUTPUTS	7407	TI	8000-74-0700	1
IC4	GATE AND, QUAD 2-INP, TTL	74L308	TI	8000-74-0810	1

WAVETEK PARTS LIST	TITLE KIT, PRE WAVE LOAD 143-0565	ASSEMBLY NO. 1209-00-1357	REV U
		PAGE 5	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	KIT, HARNESS & WIRE -143	143-1562	WVTK	1207-00-1362	1
NONE	ASSY, LAMP 143-143	143-143-1960	WVTK	1207-00-1960	1
NONE	ASSY, COAX 143-143-0383	143-143-1962	WVTK	1207-00-1962	1
NONE	ASSY, COAX 143-143-0383	143-143-1963	WVTK	1207-00-1963	1
NONE	ASSY, COAX 143-0363	143-1978	WVTK	1207-00-1978	1
NONE	ASSY, COAX 143-0363	143-1979	WVTK	1207-00-1979	1
NONE	ASSY, COAX 143-0363	143-1980	WVTK	1207-00-1980	1
NONE	ASSY, COAX 143-0363	143-1981	WVTK	1207-00-1981	1
NONE	ASSY, COAX 143-0363	143-1982	WVTK	1207-00-1982	1
NONE	ASSY, MOLEX CONNECTOR HARNESS 143-0363	143-1983	WVTK	1207-00-1983	1

WAVETEK PARTS LIST	TITLE SUPER KIT	ASSEMBLY NO. 2300-0143-02	REV
		PAGE 1	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
IC10 IC12	FLIP-FLOP DUAL D- POS EDGE TRIG	74S74	TI	8000-74-7401	2
IC2	FLIP-FLOP DUAL, D-POS EDGE TRIG, TTL	74LS74	TI	8000-74-7410	1
IC9	GATE, XOR QUAD 2INP TTSMLY	SN74LS86N	TI	8000-74-8611	1
IC11 IC13	GATE, NAND-S/TRIG, QUAD 2-INP POS	74H132	TI	8007-41-3201	2

WAVETEK PARTS LIST	TITLE KIT, PRE WAVE LOAD 143-0565	ASSEMBLY NO. 1209-00-1357	REV U
		PAGE 6	

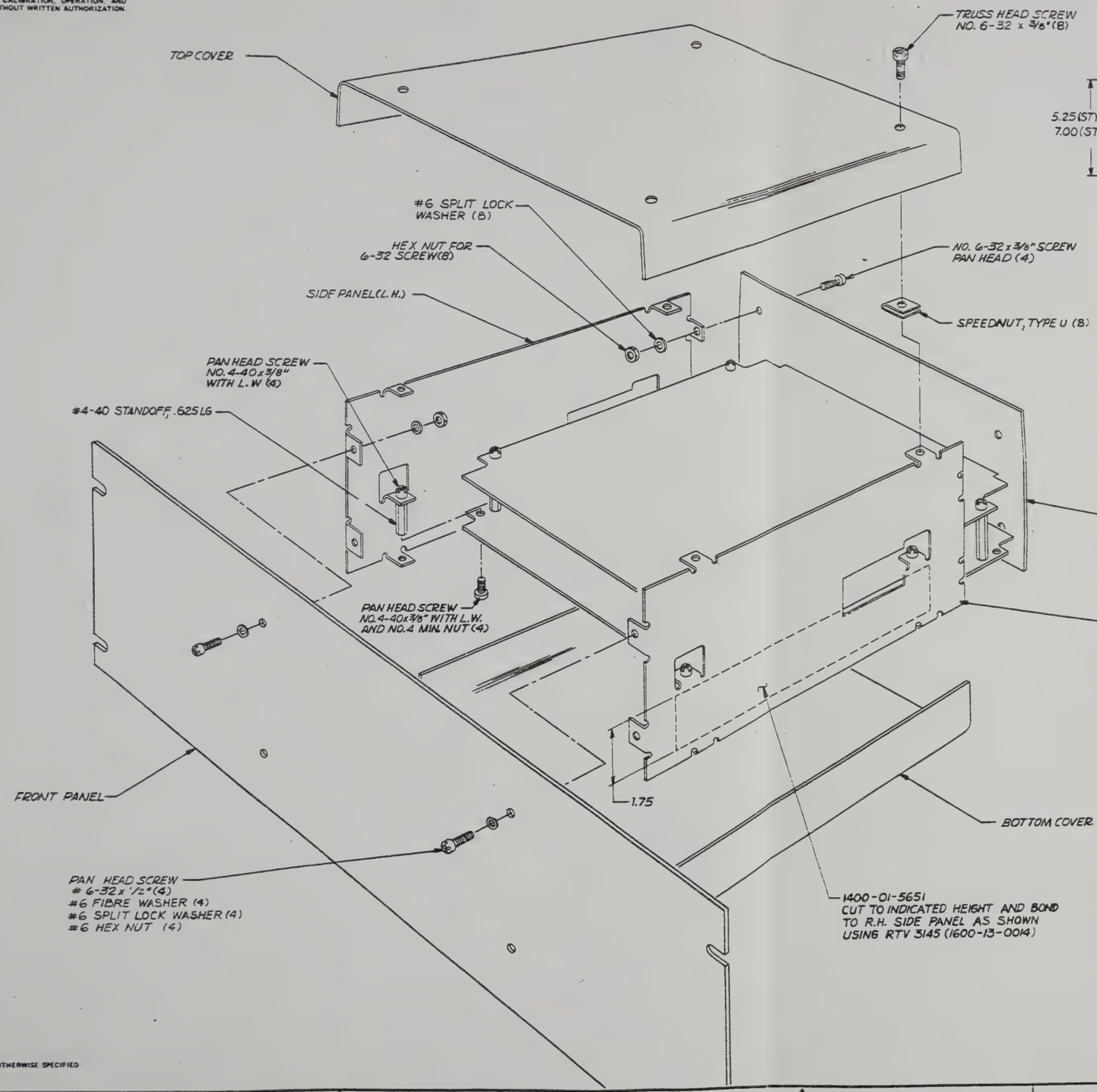
REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY, SWITCH SW-1 143-0363	143-1359	WVTK	1202-00-1359	1
NONE	ASSY, SWITCH SW-2 143-0363	143-1360	WVTK	1202-00-1360	1
NONE	ASSY, SWITCH SW-3 143-0363	143-1361	WVTK	1202-00-1361	1

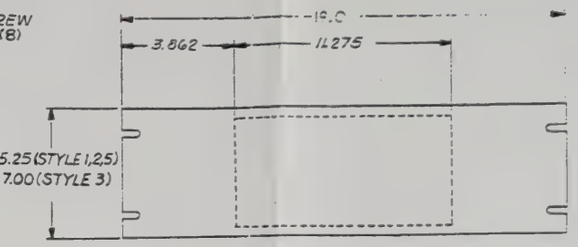
WAVETEK PARTS LIST	TITLE SUPER KIT	ASSEMBLY NO. 2300-0143-03	REV
		PAGE 1	

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE	WAVETEK
MATERIAL	CHECKED		TITLE: PARTS LIST PCA, TRIGGER/PULSE
FINISH: WAVETEK PROCESS	ENGR. APPR.		SIZE: D; FSCM NO.: 23338; DWG. NO.: 1100-00-0565; REV: U
DO NOT SCALE DRAWING	MFG APPR.		SCALE: ; MODEL: 145; SHEET 2 OF 2
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ± ; DECIMALS .XX ± .01, .XXX ± .005; ANGLES ±		

REV	ECN	BY	DATE	APP
A	4073	[illegible]	[illegible]	
E	4610	[illegible]	[illegible]	





REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO	QTY/PT
NONE	COVER, HALF, R/M	183-3412	WVTK	1400-00-3412	2
NONE	PL, SIDE, R/M, RH	183-3443	WVTK	1400-00-3443	1
NONE	PL, SIDE, R/M, LH	183-3433	WVTK	1400-00-3433	1
NONE	FRONT PANEL R/M	145-7600	WVTK	1400-00-7600	1
NONE	INSULATOR, R/M SIDE PANEL	1400-01-3631	WVTK	1400-01-3631	1
NONE	STANDOFF	013-003-9	WVTK	1420-00-0093	4
NONE	SPEEDNUT, TYPE/U	C8091-632-4	TINN	2800-09-0004	8
NONE	WASHER, SHOULDER	2661	SMITH	2800-27-0002	4

WAVETEK PARTS LIST	TITLE	ASSEMBLY NO.	REV
	R/M ASSY-MODEL 145 STYLE 1	1101-00-2894	
		PAGE 1	

NOTE UNLESS OTHERWISE SPECIFIED

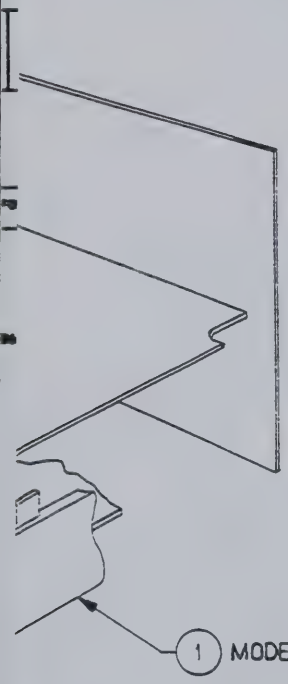
REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN D COOPER	DATE 4-28-7	WAVETEK San Diego, California
MATERIAL -/-	PROJ ENGR		TITLE ASSEMBLY RACK MOUNT
	RELEASE APPROV		
FINISH WAVETEK PROCESS -/-	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1° XX ± .030		
	DO NOT SCALE DWG	MODEL NO 143/145	DWG NO 0102-00-0621 REV B
	SCALE NONE	CODE IDENT 23338	SHEET 1 OF 1

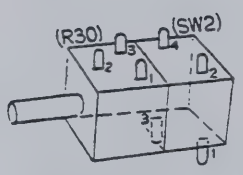
0102-00-0621 B

REV	ECN	BY	DATE	APP
A	ECO # 89-262.	MS	4/21/89	[illegible]

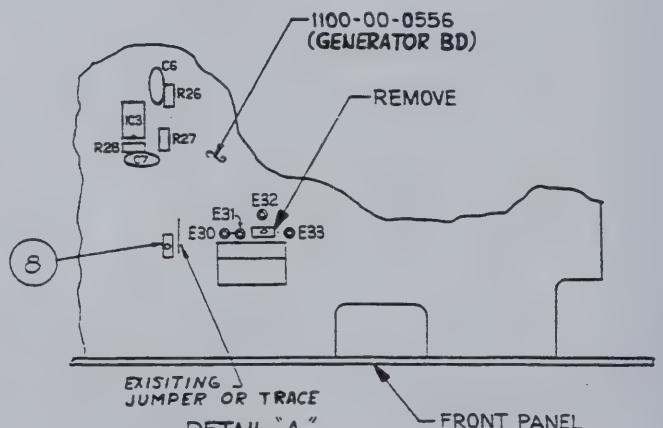
ETAIL "A"
ARTS INSTALLATION

—1100-00-3245
(GENERATOR BD.)





DETAIL "B"



DETAIL "A"
(SCALE: FULL)

M VIEW
R REMOVED)

WIRE CHART			
FROM	TO	WIRE COLOR 22 GA	LENGTH
R30-1	SW2-4	BARE	0.5
SW2-4	E31	RED	9.0
R30-2	SW2-2	ORN	1.0
SW2-2	E32	ORN	9.0
R30-3	SW2-3	YEL	1.5
SW2-3	E33	YEL	9.0
SW2-1	E30	BRN	9.0

REMOVE ALL BURRS AND BREAK SHARP EDGES
MATERIAL —
FINISH WAVETEK PROCESS —
DRAWN MELISSA SMITH 4/21/89
PROJ/ENGR
RELEASE APPROV
TOLERANCE UNLESS OTHERWISE SPECIFIED
XXX : 010 ANGLES : 1°
XX : 030
DO NOT SCALE DWG
SCALE NONE

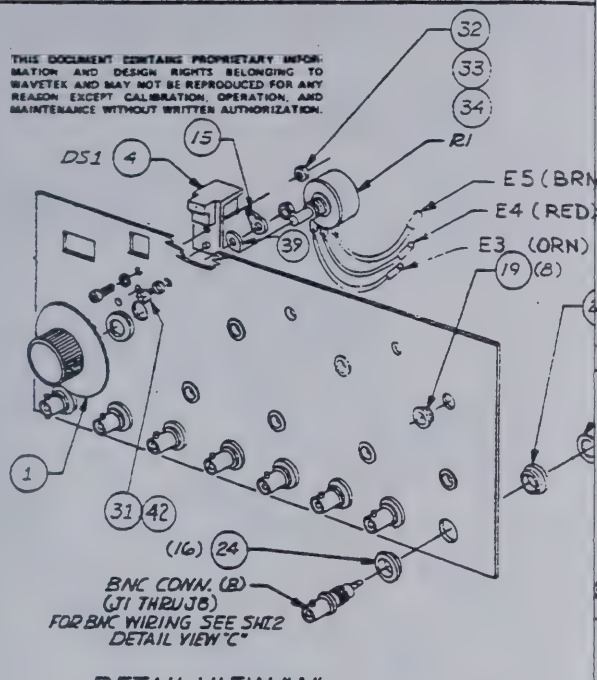
WAVETEK SAN DIEGO • CALIFORNIA

TITLE
MODEL 145-002 OPTION
SYMMETRY CONTROL

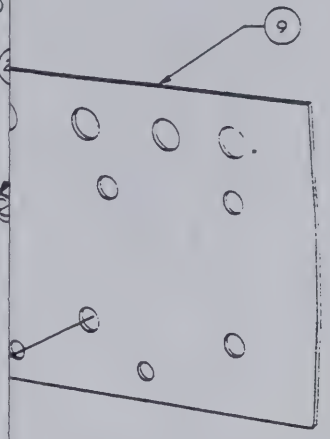
MODEL NO	DWG NO	REV
145-S-620	1101-00-3243	A

CODE IDENT 23338 SHEET 1 OF 3

REV	ECA	BY	DATE	APP

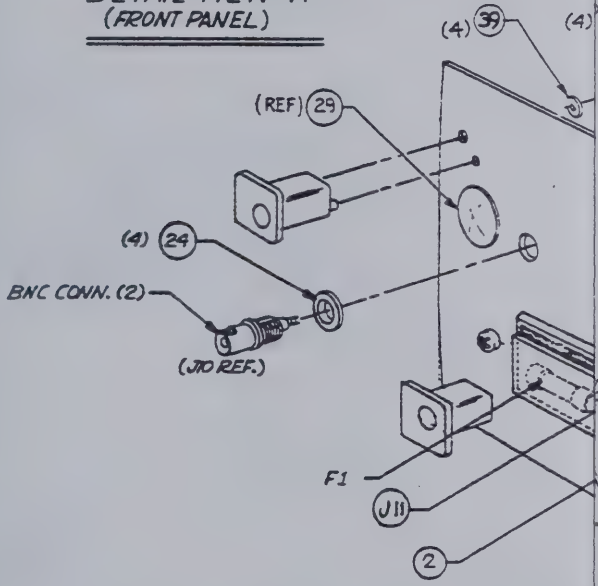


DETAIL VIEW "A" (FRONT PANEL)



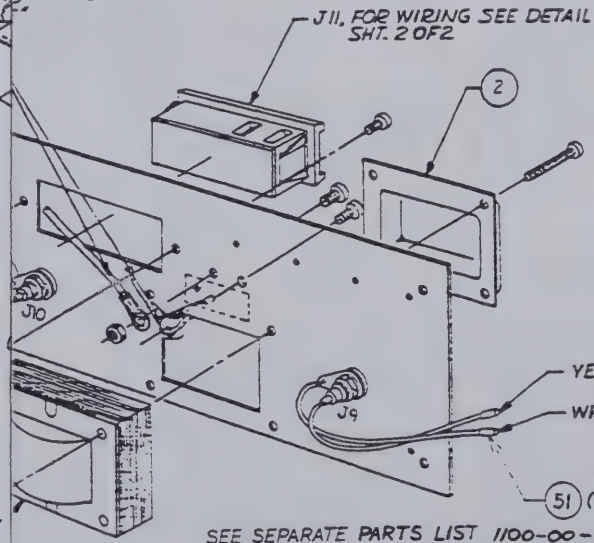
C. BD. ASS'Y. (1101-00-3245 REF.)

C. BD. ASS'Y. (0102-00-0565 REF.)



DETAIL VIEW "B" REAR PANEL

FOR WIRING SEE DETAIL "D"



SEE SEPARATE PARTS LIST 1100-00-3243

7. AFTER INSTALLATION OF FRONT AND REAR FEET, APPLY (1) DROP OF LOCTITE 414 (OR EQUIV.) TO SCREW THREADS (6). ALLOW 1 HR. MIN. TO DRY WITH FEET UP.

6 APPLY INSULATOR TO BOTTOM SIDE AS ARROW INDICA

5 INSTALL ITEM 28 USING DOW CORNING RTV 3140 TO COVER. THEN APPLY INSULATOR. SEE 6

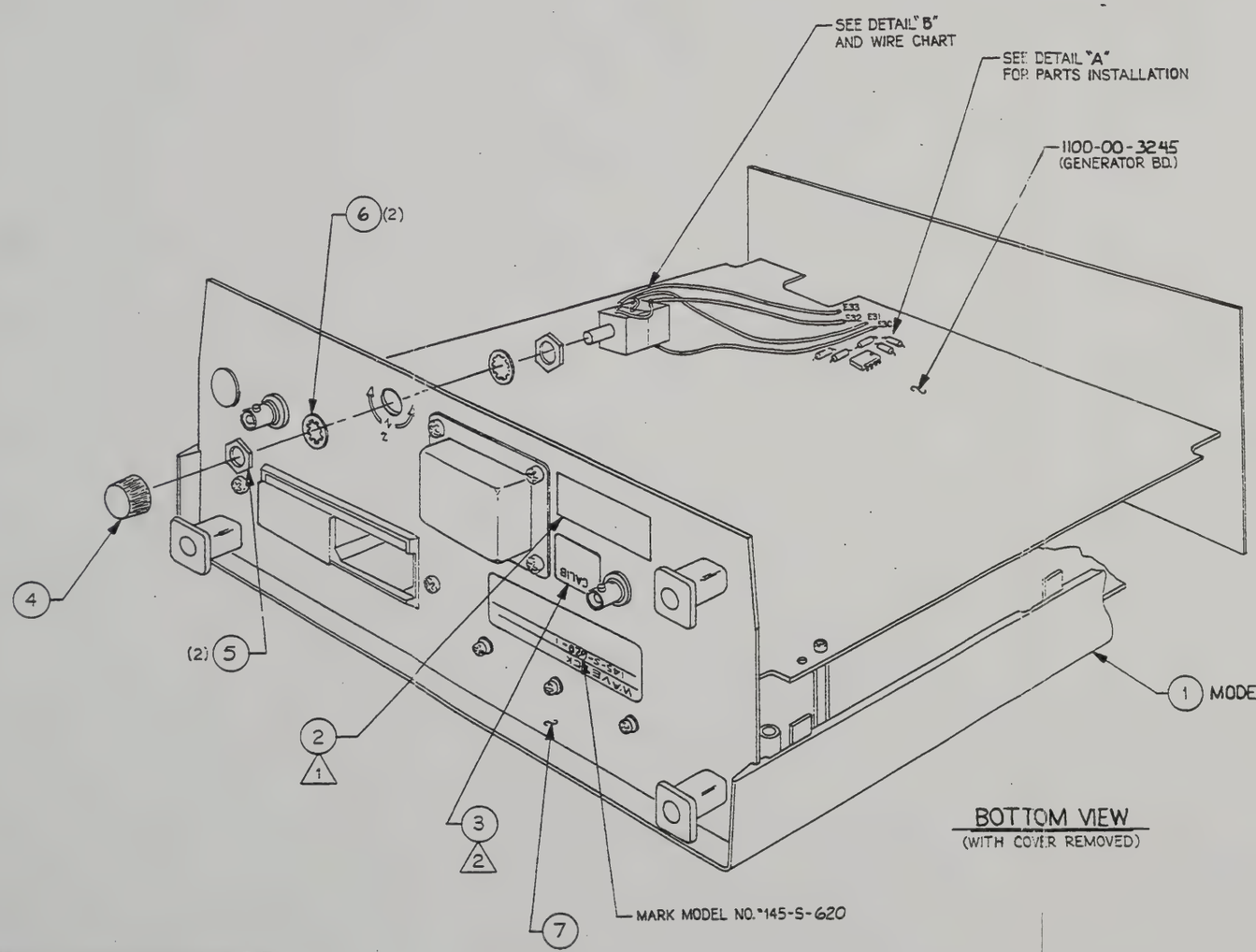
4 CEMENT ITEM 6 (2) TO ITEM 5 (TYP. BOTH SIDES)

3 MOUNT SWITCH TO P.C. BOARD PRIOR TO INSTALLING FRONT PANEL USE NO. 2-56 x 1/4 PAN HEAD SCREW WITH NUT (2)

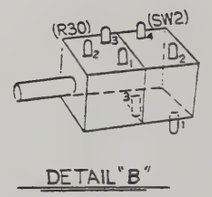
NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN MELISSA SMITH DATE 4/20/89	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	PROJENGR	TITLE: ASSEMBLY STANDARD CHASSIS
	RELEASE, APPROV	
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030	
	DO NOT SCALE DWG	MODEL NO 145-S-620 DWG NO 1101-00-3243 REV A
	SCALE	CODE IDENT 23238 SHEET 2 OF 3

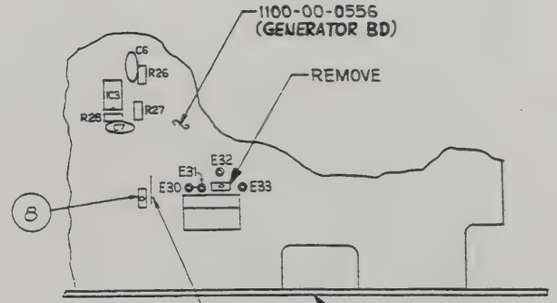
REV	ECN	BY	DATE	APP
A	ECO # 87-262.	MS	4/21/88	[illegible]



BOTTOM VIEW
(WITH COVER REMOVED)



DETAIL "B"



DETAIL "A"
(SCALE: FULL)

WIRE CHART			
FROM	TO	WIRE COLOR 22 GA	LENGTH
R30-1	SW2-4	BARE	0.5
SW2-4	E31	RED	9.0
R30-2	SW2-2	ORN	1.0
SW2-2	E32	ORN	9.0
R30-3	SW2-3	YEL	1.5
SW2-3	E33	YEL	9.0
SW2-1	E30	BRN	9.0

2 UPON COMPLETION OF CALIBRATION AND QUALITY CONTROL ACCEPTANCE APPLY SIGNED CALIBRATION LABEL IN AREA INDICATED.

1 MARK LABEL FOR OPTION 002

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES
MATERIAL —
FINISH WAVETEK PROCESS —
DRAWN MELISSA SMITH
PROJ/ENGR
RELEASE APPROV.
TOLERANCE UNLESS OTHERWISE SPECIFIED XXX : 010 ANGLES : 1° XX : 030
DO NOT SCALE DWG
SCALE NONE

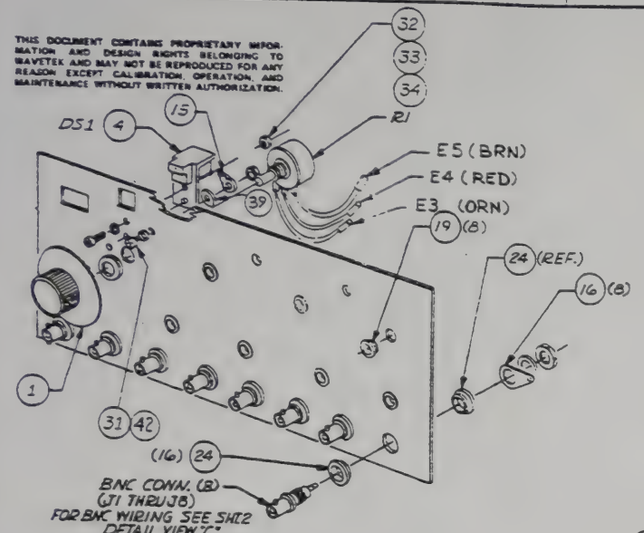
WAVETEK SAN DIEGO, CALIFORNIA

TITLE
MODEL 145-002 OPTION SYMMETRY CONTROL

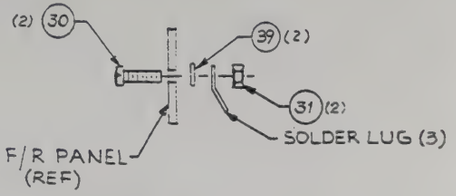
MODEL NO 145-S-620
DWG NO 1101-00-3243
REV A
CODE IDENT NO 23338
SHEET 1 OF 3

NOTES:
ALL CONNECTIONS TO BE MECHANICALLY SECURE PRIOR TO SOLDERING GROUND WIRES.

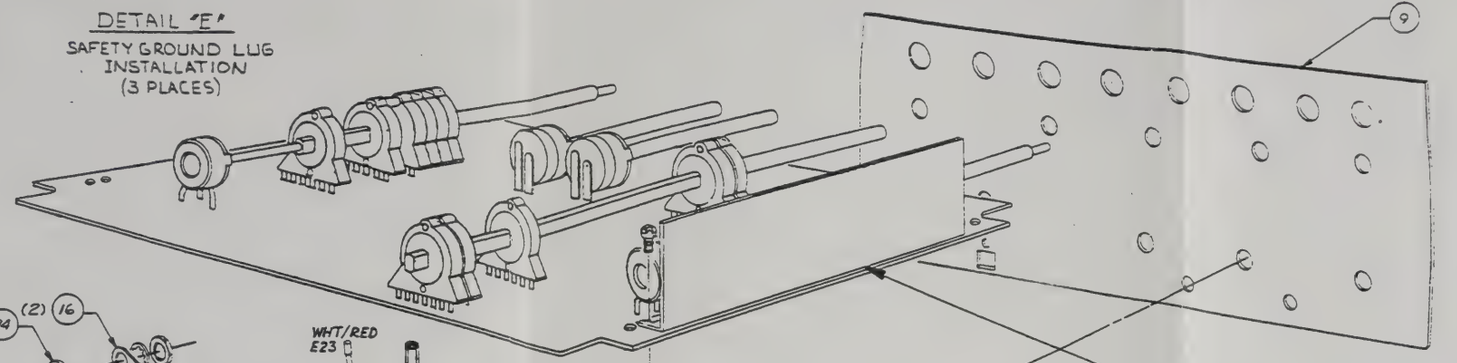
REV	ECN	BY	DATE	APP



DETAIL VIEW "A"
(FRONT PANEL)



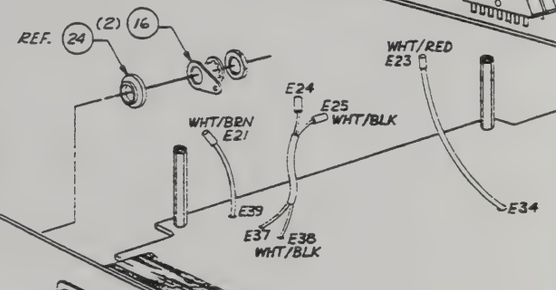
DETAIL "E"
SAFETY GROUND LUG INSTALLATION
(3 PLACES)

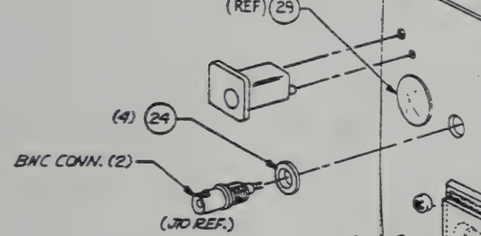


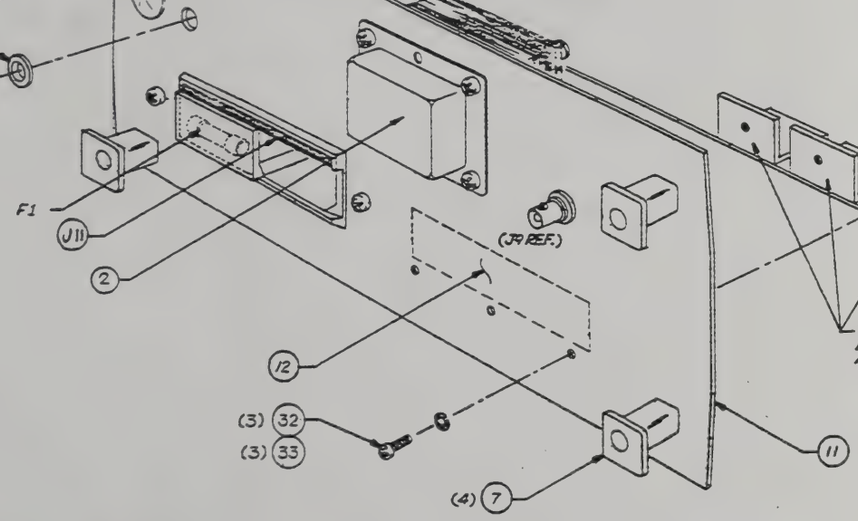
SEE DETAIL VIEW "A"
(FOR FRONT PANEL)

P.C. BD. ASS'Y. (1101-00-3245 REF.)

P.C. BD. ASS'Y. (0102-00-0565 REF.)



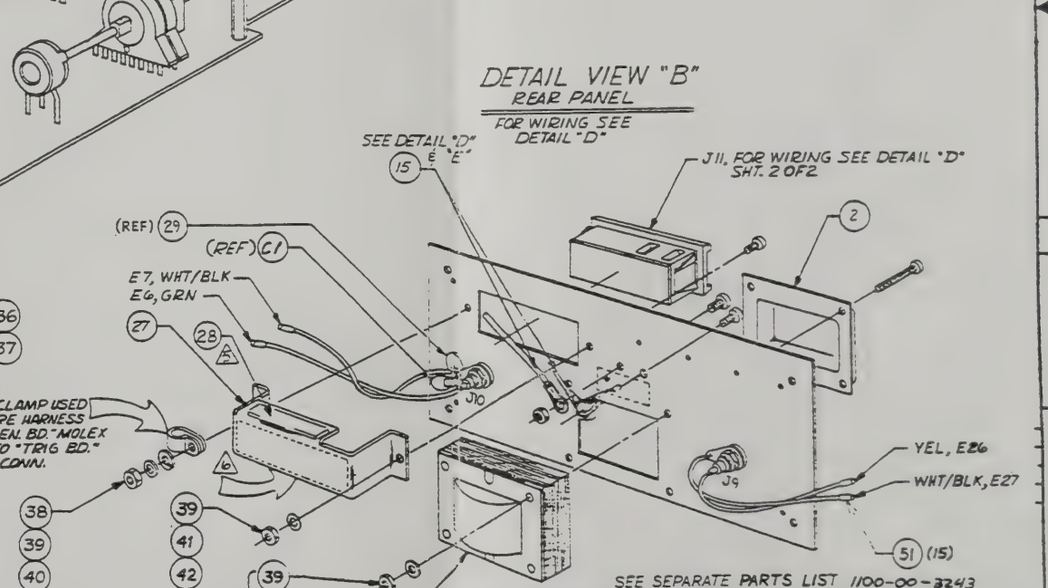




THERMAL COMPOUND BETWEEN HEAT SINKS AND REAR PANEL

36
37

DETAIL VIEW "B"
REAR PANEL
FOR WIRING SEE DETAIL "D"



(2800-00-0022) CABLE CLAMP USED FOR WIRE HARNESS FROM "GEN. BD." MOLEX CONN., TO "TRIG BD." MOLEX CONN.

SEE DETAIL VIEW "B"
(FOR REAR PANEL)

7. AFTER INSTALLATION OF FRONT AND REAR FEET, APPLY (1) DROP OF LOCTITE 414 (OR EQUIV.) TO SCREW THREADS (6). ALLOW 1 HR. MIN. TO DRY WITH FEET UP.

△6 APPLY INSULATOR TO BOTTOM SIDE AS ARROW INDICATES

△5 INSTALL ITEM 28 USING DOW CORNING RTV 3140 TO COVER. THEN APPLY INSULATOR. SEE △6

△4 CEMENT ITEM 6 (2) TO ITEM 5 (TYP. BOTH SIDES)

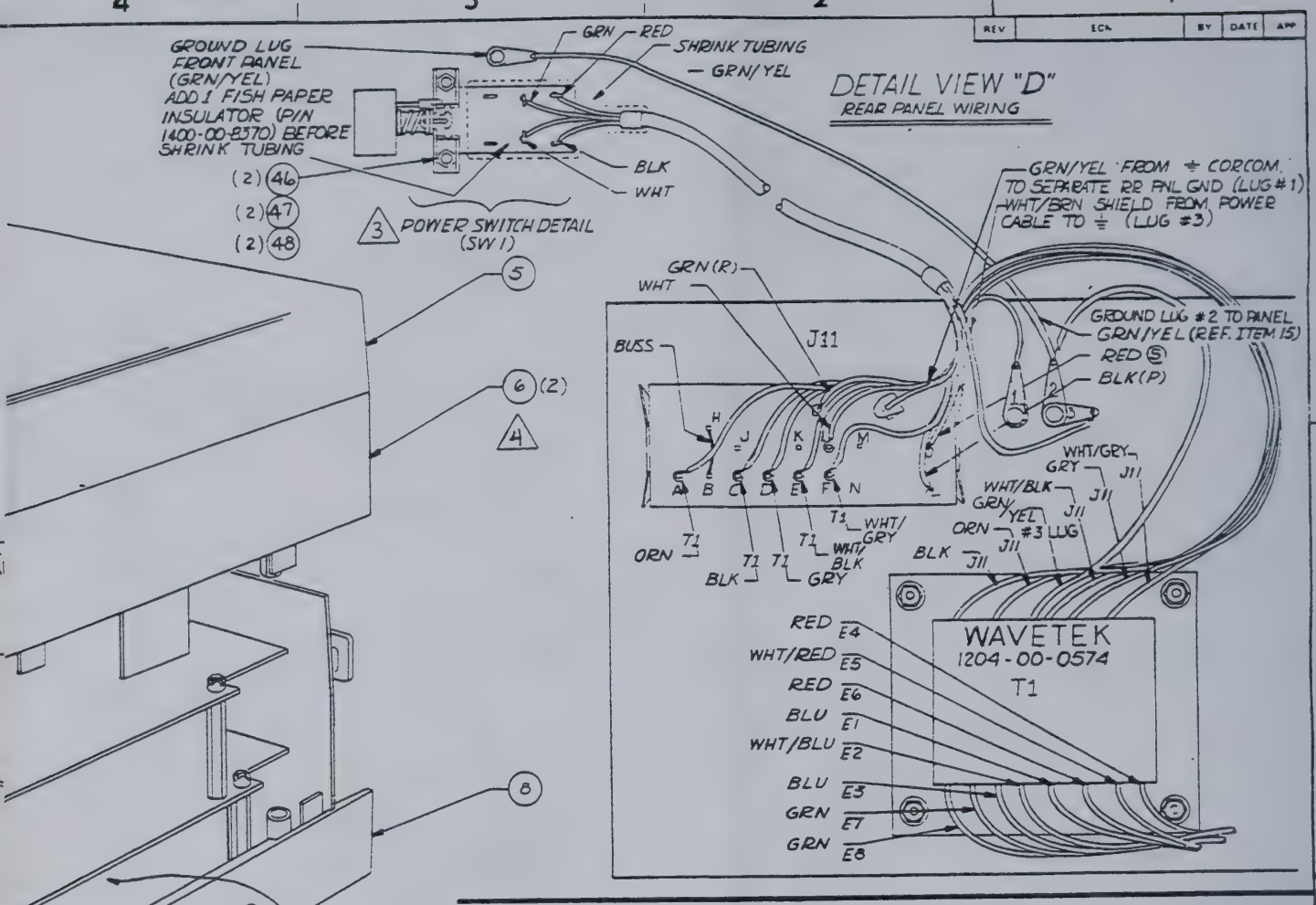
△3 MOUNT SWITCH TO P.C. BOARD PRIOR TO INSTALLING FRONT PANEL USE NO. 2-56 x 1/4 PAN HEAD SCREW WITH NUT (2)

NOTE: UNLESS OTHERWISE SPECIFIED

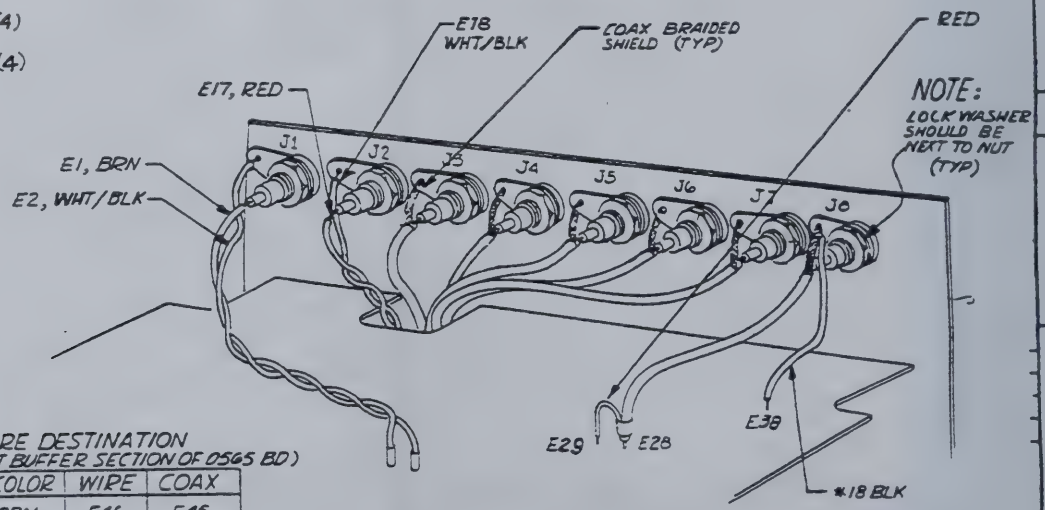
SEE SEPARATE PARTS LIST 1100-00-3243

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN MELISSA SMITH	DATE 4/20/95	WAVETEK San Diego, California
MATERIAL	PROJ/SAGE		TITLE: ASSEMBLY STANDARD CHASSIS
	RELEASE, APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030		
	DO NOT SCALE DWG		MODEL NO 145-S-620 / DWG NO 1101-00-3243 / REV A
	SCALE		COST CODE 23238 / SHEET 2 OF 3

REV	ECN	BY	DATE	APP



DETAIL VIEW "C"
BNC CONN. WIRING, FRONT PANEL



WIRE DESTINATION
(OUTPUT BUFFER SECTION OF 0565 BD)

FROM	WIRE COLOR	WIRE	COAX
J3	WHT/ORN	E46	E45
J4	WHT/YEL	E47	E44
J5	WHT/GRN	E43	E42
J6	WHT/BLU	E41	E40
J7	WHT/VIO	E31	E30

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN MELISSA SMITH 11/20/89	WAVETEK SAN DIEGO, CALIFORNIA	
MATERIAL	PROJECT	TITLE: ASSEMBLY STANDARD CHASSIS	
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .03		
	DO NOT SCALE DWG	MODEL NO 145-S-620	DRAWING 1101-00-3243 REV A
	SCALE	CODE IDENT 23338	SHEET 3 OF 3

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO
NONE	ASSY DWG. 145-002 OPTION, SYMMETRY CONTROL	0102-00-0487
NONE	PCA, TRIGGER/PULSE	145-565
NONE	A/D CHASSIS 145-S-620	1101-00-3243
NONE	REAR PANEL ASSY 145-S-620	1200-00-3244
NONE	ASSY, FRONT PANEL -145	145-1535
27	SHIELD, PWR	801-6210
NONE	INSULATOR PLATE REF: 3200-03-0004	145-3931
18	COAX KNOB SET	RB-67-1-SB+0-M-9
NONE	CLAMP, CABLE	E-4
48	WASHER, LOCK, SPLIT S/S #2	MS35338-134
33	WASHER, LOCK REG. S/S #4	MS 35338-135
39	WASHER, LOCK, REG S/S #6	MS 35338-136
40	WASHER, FLAT, SS, #6	AN 960C6

RT DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
SY DRWG. CHASSIS	0102-00-0575	WVTK	0102-00-0575	1
L ASSY-145	1201-00-1885	WVTK	1201-00-1885	1
DICATOR, DIAL	180-303	WVTK	1400-00-4970	1
EL, FRONT	145-6770	WVTK	1400-00-6770	1
N BNC	KC-7946	KING	2100-01-0002	8
LDER LUG	1497	SMITH	2100-04-0012	8
LDER LUG	11A144	ZIER	2100-04-0025	1
HING NYLINER	4L2FF	THOMN	2800-01-0002	8
SHER, SHOULDER, WHITE	2668	SMITH	2800-27-0004	16
SHER, WAVE SPRING	9804-133-1	SEA	2800-28-0021	1
SHER, FLAT, BRASS, 25 ID, .400 OD	5714-62-32	SESTN	2800-28-0022	1
SHER, LOCK REG, S/S	MS 35338-135	CMRCL	2800-45-4000	1
REW PLPS PAN M/S -8 S/S 4-40X3/8	MS 51957-15	CMRCL	2800-48-4106	1
REW PLPS PAN M/S -8 S/S 6-32X3/8	MS 51957-28	CMRCL	2800-48-6106	1
T, MACHINE SCREW,	NAS 671C4	CMRCL	2800-50-4100	1

WAVETEK PARTS LIST	TITLE: CHASSIS ASSY 145-S-620	ASSEMBLY: FRONT PANEL -145	ASSEMBLY NO. 1206-00-1535	REV B
			PAGE 1	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO
	LARGE OUTLINE	
46	SCREW PLPS PAN M/S 18-8 S/S 2-56X1/4	SCREW PH 2-56X1/4
32	SCREW PLPS PAN M/S 18-8 S/S 4-40X3/8	MS 51957-15
42	SCREW PLPS PAN M/S 18-8 S/S 6-32X3/8	MS 51957-28
38	SCREW, MACH, PH, PHLPS, 6-32 X 1/2, SS 18-8 SS, 06-32X1/2	MS 51957-30
47	NUT, MACHINE SCREW, 18-8 SS, #2-56	2-56 M/S NUT 18-8
41	NUT, MACHINE SCREW, 18-8 SS, #6-32	MS 35649-64

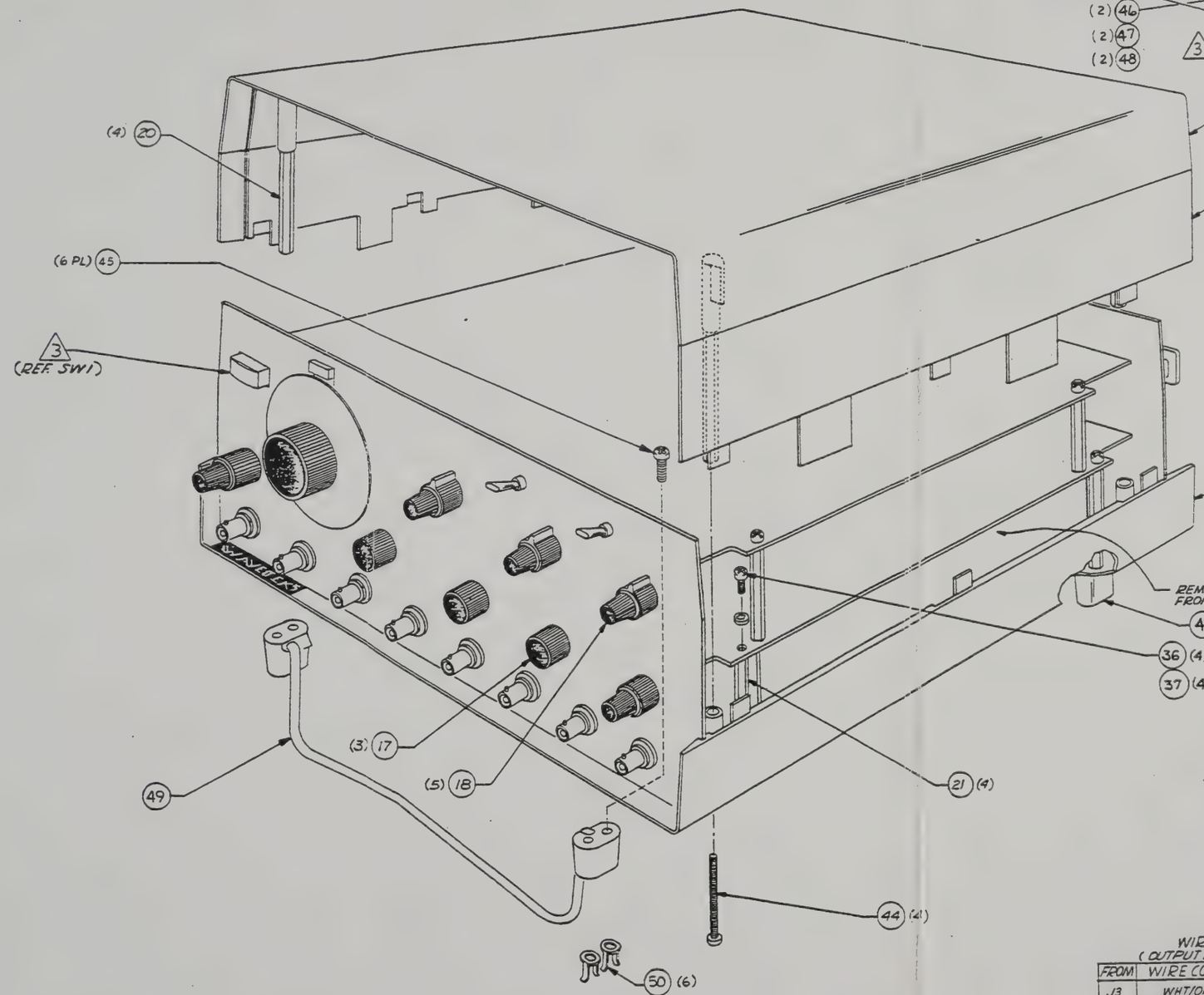
ART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
8-8 SS, #4-40				
UT, LOCKING, MS, -32, SS 18-8 SS, 6-32	MS 20364-432	CMRCL	2800-30-6102	1
OT, DIAL, 3K+/-3%, RECISION, LINEAR	ECONOPOT MKIII 78PF-1	MEI	4600-03-0212	1

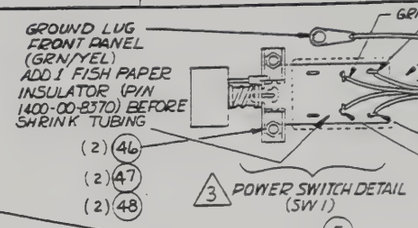
WAVETEK PARTS LIST	TITLE: CHASSIS ASSY 145-S-620	ASSEMBLY: FRONT PANEL -145	ASSEMBLY NO. 1206-00-1535	REV B
			PAGE 2	

NOTE: UNLESS OTHERWISE SPECIFIED

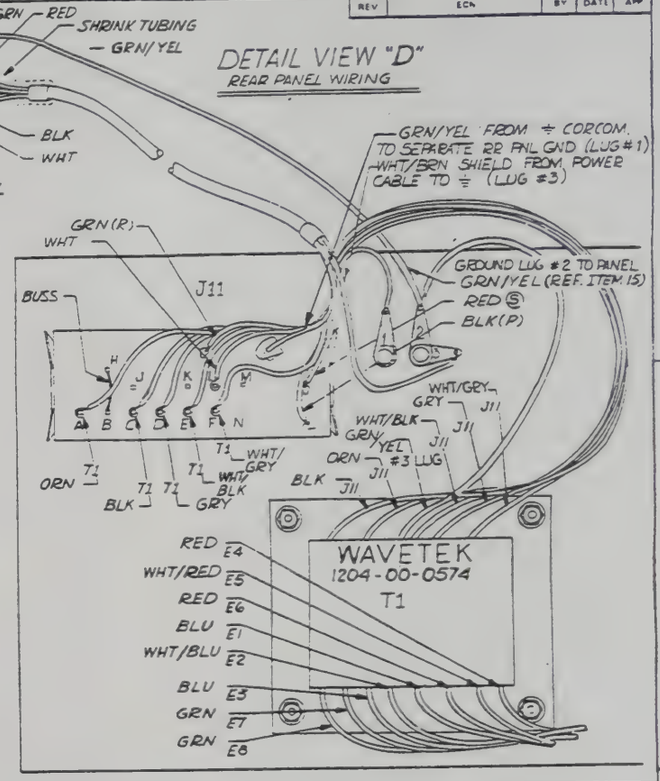
REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE	WAVETEK San Diego, California
MATERIAL	CHECKED		TITLE: PARTS LIST CHASSIS
	ENGR. APPR.		
FINISH WAVETEK PROCESS	RELEASE APPROV		
DO NOT SCALE DRAWING	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES .XX ± .XXX ±		SIZE D | FSCM NO. 23338 | DWG. NO. 1100-00-3243 | REV B SCALE 145-S-620 | SHEET 1 OF 1

REV	ECN	BY	DATE	APP

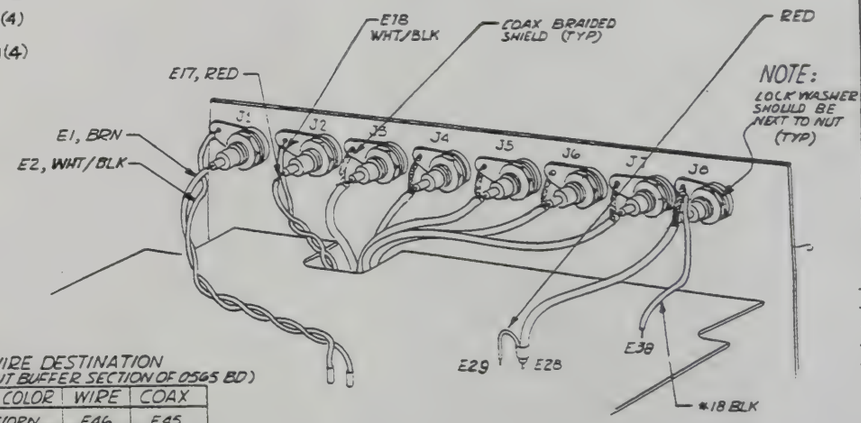




DETAIL VIEW "D"
REAR PANEL WIRING



DETAIL VIEW "C"
BNC CONN. WIRING, FRONT PANEL



WIRE DESTINATION
(OUTPUT BUFFER SECTION OF 0565 BD)

FROM	WIRE COLOR	WIRE	COAX
J3	WHT/ORN	E46	E45
J4	WHT/YEL	E47	E44
J5	WHT/GRN	E43	E42
J6	WHT/BLU	E41	E40
J7	WHT/VIO	E31	E30

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN MELISSA SMITH 4/20/89	WAVETEK San Diego, California	
MATERIAL	PROJECT	TITLE	ASSEMBLY STANDARD CHASSIS
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ±.010 ANGLES ±1 XX ±.030		
	DO NOT SCALE DWG	MODEL NO 145-S-620	DWG NO 1101-00-3243 REV A
	SCALE	CODE IDENT 23338	SHEET 3 OF 3

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DWG. 145-002 OPTION: SYMMETRY CONTROL	0102-00-0487	WVTK	0102-00-0487	1
NONE	PCA. TRIGGER/PULSE	145-365	WVTK	1100-00-0365	1
NONE	A/D CHASSIS 145-S-620	1101-00-3243	WVTK	1101-00-3243	1
NONE	REAR PANEL ASSY 145-S-620	1200-00-3244	WVTK	1200-00-3244	1
NONE	ASSY. FRONT PANEL -145	145-1555	WVTK	1206-00-1555	1
27	SHIELD, PWR	801-6210	WVTK	1400-00-6210	1
NONE	INSULATOR PLATE REF: 3200-03-0004	145-3931	WVTK	1400-01-3931	1
18	COAX KNOB SET	RB-67-1-63+0-M-9	ROGAN	2400-01-0009	3
NONE	CLAMP, CABLE	E-4	RICH	2800-00-0022	1
48	WASHER, LOCK, SPLIT S/S #2	MS35338-134	MS	2800-43-2000	2
33	WASHER, LOCK REG. S/S #4	MS 35338-135	CMRCL	2800-43-4000	3
39	WASHER, LOCK, REG S/S #6	MS 35338-136	CMRCL	2800-43-6000	9
40	WASHER, FLAT, SS. #6	AN 960C6	CMRCL	2800-46-6001	1

WAVETEK PARTS LIST | TITLE: CHASSIS ASSY 145-S-620 | ASSEMBLY NO. 1100-00-3243 | REV B | PAGE 1

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DWG, CHASSIS	0102-00-0575	WVTK	0102-00-0575	1
T1	TRANSFORMER	143-574	WVTK	1204-00-0574	1
NONE	ASSY. CONDUCTOR CABLE 143-145	143-145-1959	WVTK	1207-00-1959	1
2	END BELL	1400-00-0174	WVTK	1400-00-0174	1
7	POST	180-302	WVTK	1400-00-5020	4
NONE	INSULATOR, PWR SWITCH REF: 1600-99-0001	801-6370	WVTK	1400-00-6370	1
2	LABEL, OPTION, MODEL 23	1400-01-9890	WVTK	1400-01-9890	1
11	REAR PANEL	1400-02-0600		1400-02-0600	1
C1	CAP CER MON .01MF 50V, AXIAL	CAC02Z5U103Z100A	CORNG	1300-01-0310	1
J10 J9	CONN BNC	RC-7946	KING	2100-01-0002	2
J11	CONN. RECEPTACLE	6WJ1	CORCM	2100-03-0026	1
16A	SOLDER LUG	1497	SMITH	2100-04-0012	2
15A	SOLDER LUG	11A144	ZIER	2100-04-0025	3
4	KNOB STD	RB-67-1-63-M	ROGAN	2400-01-0008	1
F1	FUSE, 1/2A 250V	313.500	LITFU	2400-05-0010	1

WAVETEK PARTS LIST | TITLE: REAR PANEL ASSY 145-S-620 | ASSEMBLY NO. 1200-00-3244 | REV B | PAGE 1

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG, CHASSIS	0102-00-0575	WVTK	0102-00-0575	1
NONE	DIAL ASSY-145	1201-00-1885	WVTK	1201-00-1885	1
4	INDICATOR, DIAL	180-303	WVTK	1400-00-4970	1
9	PANEL, FRONT	145-6770	WVTK	1400-00-6770	1
J1 J2 J3 J4 J5 J6 J7 J8	CONN BNC	RC-7946	KING	2100-01-0002	8
16	SOLDER LUG	1497	SMITH	2100-04-0012	8
15	SOLDER LUG	11A144	ZIER	2100-04-0025	1
19	BUSHING NYLINER	4L2FF	THOMN	2800-01-0002	8
24	WASHER, SHOULDER, WHITE	2668	SMITH	2800-27-0004	16
55	WASHER, WAVE SPRING	9804-133-1	SEA	2800-28-0021	1
56	WASHER, FLAT, BRASS, .625 ID, .400 OD	5714-02-32	BESTH	2800-28-0022	1
33	WASHER, LOCK REG. S/S #4	MS 35338-135	CMRCL	2800-43-4000	1
32	SCREW PLPS PAN M/S 10-8 S/S 4-40X3/8	MS 51957-15	CMRCL	2800-48-4106	1
42	SCREW PLPS PAN M/S 10-8 S/S 6-32X3/8	MS 51957-28	CMRCL	2800-48-6106	1
34	MT. MACHINE SCREW.	NAS 671C4	CMRCL	2800-50-4100	1

WAVETEK PARTS LIST | TITLE: ASSY. FRONT PANEL -145 | ASSEMBLY NO. 1206-00-1555 | REV B | PAGE 1

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
	LARGE OUTLINE				
46	SCREW PLPS PAN M/S 10-8 S/S 2-56X1/4	SCREW PH 2-56X1/4SS/S	CMRCL	2800-48-2104	2
32	SCREW PLPS PAN M/S 10-8 S/S 4-40X3/8	MS 51957-15	CMRCL	2800-48-4106	3
42	SCREW PLPS PAN M/S 10-8 S/S 6-32X3/8	MS 51957-28	CMRCL	2800-48-6106	1
38	SCREW, MACH. PH. PHLPS. 6-32 X 1/2. SS 10-8 SS. 66-32X1/2	MS 51957-30	CMRCL	2800-48-6108	1
47	NUT, MACHINE SCREW, 10-8 SS. 62-56	2-56 M/S NUT 10-8 S/S	CMRCL	2800-50-2100	2
41	NUT, MACHINE SCREW, 10-8 SS. 66-32	MS 35649-64	CMRCL	2800-50-6101	2

WAVETEK PARTS LIST | TITLE: CHASSIS ASSY 145-S-620 | ASSEMBLY NO. 1100-00-3243 | REV B | PAGE 2

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
5	NUT, PANEL, 3/8X1/2X.09 2.2	3/8 X 1/2 NUT	CMRCL	2800-16-0000	2
24	WASHER, SHOULDER, WHITE	2668	SMITH	2800-27-0004	4
6	WASHER, INTERNAL TOOTH, 3/8 IN.	3/8ITLW	CMRCL	2800-28-0000	2
29	PLUG BUTTON	2663(BLACK)	HEYCO	2800-35-0004	1
39	WASHER, LOCK, REG S/S #6	MS 35338-136	CMRCL	2800-43-6000	4
NONE	WASHER, FLAT, SS. 66 LARGE OUTLINE	AN 960C6	CMRCL	2800-46-6001	4
43	MS. PH. PHLPS. 6-32 X 1 1/2. SS 10-8 SS. 66-32X1.5	MS 51957-36	CMRCL	2800-48-6124	4
30	SCREW, CAP, SOCKET HD. 6-32X3/8	MS 16995-17	CMRCL	2800-49-6106	2
41	NUT, MACHINE SCREW, 10-8 SS, 66-32	MS 35649-64	CMRCL	2800-50-6101	4
31	NUT, LOCKING, MS. 6-32. SS 10-8 SS. 66-32	MS 20364-632	CMRCL	2800-50-6102	2
35	SCREW, SELF-TAP, PH. PHL PS. #6 X 3/8. SS TYPE BF. #6X3/8	MS24626-19	CMRCL	2800-59-6006	4
R30	CONTROL SHAFT, SWITCH-POT, CERMET, LINEAR 50K 10%, CCW DETENT	72LIN0488503M	AB	4602-05-0304	1
SW1	SWITCH ASSY PB	1XTA0003TA1008-4/ME152	ECG	9102-00-0008	1
NONE	PWR CORD	17251	BELDN	6001-80-0005	1

WAVETEK PARTS LIST | TITLE: REAR PANEL ASSY 145-S-620 | ASSEMBLY NO. 1200-00-3244 | REV B | PAGE 2

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
	10-8 SS. 64-40				
J1	NUT, LOCKING, MS. 6-32. SS 10-8 SS. 66-32	MS 20364-632	CMRCL	2800-50-6102	1
R1	POT, DIAL, 5K+/-5%, PRECISION, LINEAR	ECONOPOT MKIII 78PF-1	MEI	4600-05-0212	1

WAVETEK PARTS LIST | TITLE: ASSY. FRONT PANEL -145 | ASSEMBLY NO. 1206-00-1555 | REV B | PAGE 2

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES | MATERIAL | FINISH: WAVETEK PROCESS | DO NOT SCALE DRAWING | DRAWN | CHECKED | PROJ. ENGR. | RELEASE APPROV | DATE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: FRACTIONS ±1/64, DECIMALS .XX ±.01, .XXX ±.005, ANGLES ±1°

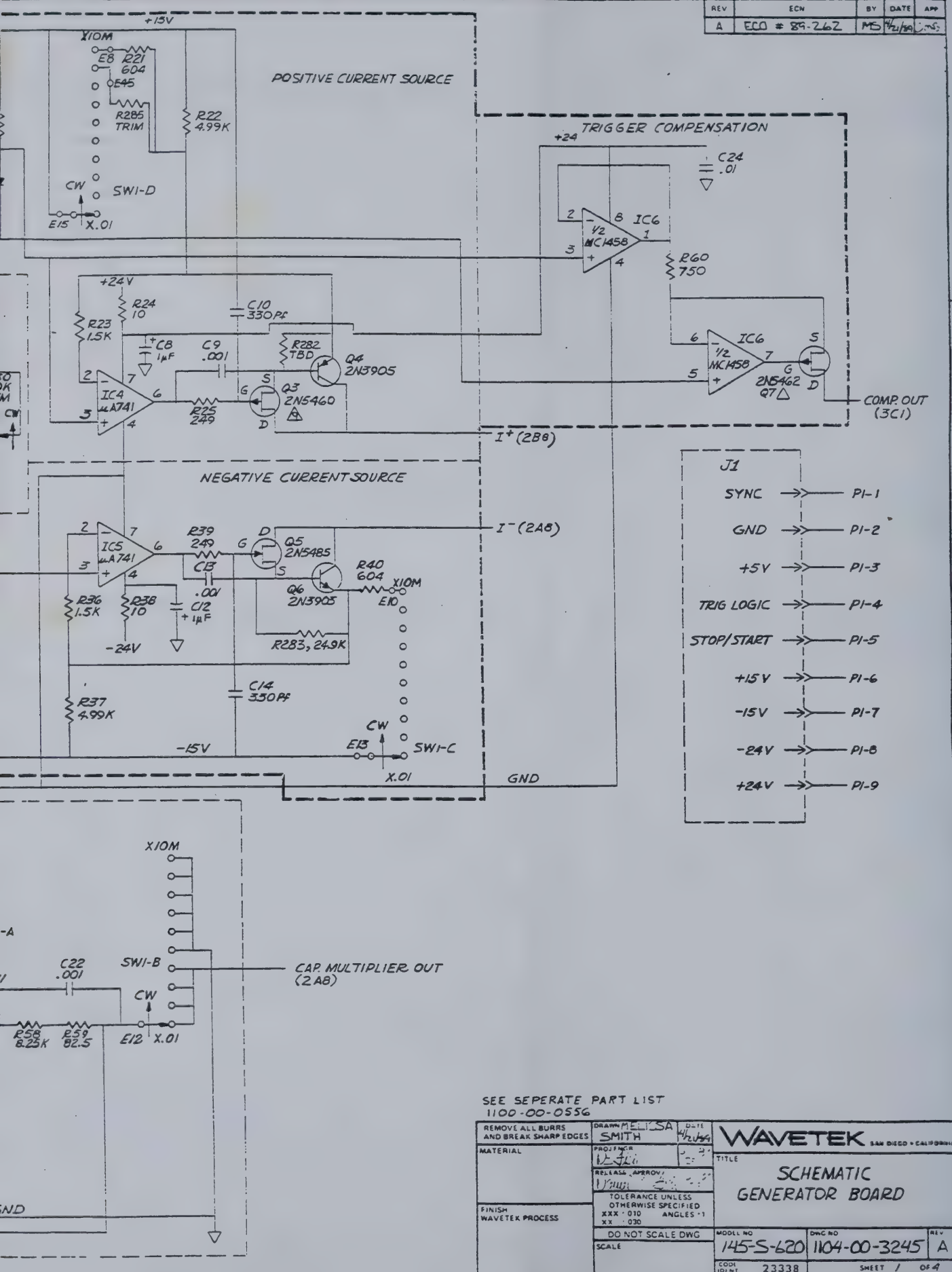
WAVETEK

TITLE: PARTS LIST CHASSIS

SIZE: D | PROJ NO. 23338 | DWG. NO. 1100-00-3243 | REV B

SCALE | 145-S-620 | SHEET 1 OF 1

REV	ECN	BY	DATE	APP
A	ECO # 89-262	MS	4/21/89	



SEE SEPERATE PART LIST
1100-00-0556

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN MELISSA SMITH	DATE 4/21/89	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	PROJ MGR		TITLE: SCHEMATIC GENERATOR BOARD
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 XX ± .030 ANGLES ± 1		
	DO NOT SCALE DWG	MODEL NO 145-S-620	DWG NO 1104-00-3245 REV A
	SCALE	CODE IDENT 23338	SHEET 1 OF 4

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	CRIO-MFGR-PART-NO
NONE	A/D GENERATOR BD 145-S-620	1101-00-3245
NONE	SCHEMATIC GENERATOR BD 145-S-620	1104-00-3245
13	PCA. CURRENT LIMITER	143-1008
NONE	KIT. PRE WAVE LOAD 145-3245	1208-00-3246
C49	CAP. CER. 36PF. 1KV	DD-360
C37 38 39	CAP SET. POLYC MIXED MATCHED SET	1509-80-0008
J1	CONN. 9PIN	09-60-1091
18	SOCKET. MINISERT	75060-012
NONE	KNOB STD	RB-67-1-89-M
NONE	COAX KNOB SET	RB-67-1-89+0-M-9
NONE	SUPER KIT	2500-0145-01
NONE	HEAT SINK	207
NONE	TRANSIPAD	531-218
14	HEATSINK	2604SH5E
11	NUT. MACHINE SCREW.	NAS 671C6

DESCRIPTION	CRIO-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
DRNG GENERATOR	0101-00-0536	WVTK	0101-00-0536	1
ATIC GENERATOR	0103-00-0536	WVTK	0103-00-0536	1
ER. 3PF. 1KV	DD-030 LONG LEAD	CRL	1500-00-3001	1
ER 3PF. 1KV. 10%	0311-00018	WVTK	1500-00-3011	4
ER. 10PF. 1KV	DD-100	CRL	1500-01-0011	2
ER. 100PF. 1KV	DD-101	CRL	1500-01-0111	2
ER. .001UF. 1KV	DD-102	CRL	1500-01-0211	3
ER MON .01MF AXIAL	CAC0Z25U103Z100A	CORNG	1500-01-0310	47
CER. MON. 1MF. 50V.	CAC0325U104Z050A	CORNG	1500-01-0405	13
CER. 130PF. 1KV	DD-131	CRL	1500-01-3111	1
CER. 330PF. 1KV	DD-331	CRL	1500-03-3111	2
MICA. 100PF. 500V	DM19-101J	ARCO	1500-11-0100	1
MICA. 15PF. 500V	DM19-150J	ARCO	1500-11-0000	1

WAVETEK PARTS LIST	TITLE PCA. GENERATOR BD 145-S-620	ASSEMBLY NO.

WAVE LOAD 145-3245	ASSEMBLY NO. 1208-00-3246	REV A
	PAGE 1	

REFERENCE DESIGNATORS	PART DESCRIPTION	CRIO-MFGR-PART-NO
	18-8 SS. 6-32 SMALL PATTERN	
844	TRANS	2N3866
845	TRANS	2N5160-18

DESCRIPTION	CRIO-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
MICA. 220PF. 500V. R	DM19-221J	ARCO	1500-12-2100	3
MICA. 30PF. 500V. RA	DM19-300J	ARCO	1500-13-0000	1
MICA. 47PF. 500V	DM19-470J	ARCO	1500-14-7000	2
MICA. 68PF. 500V	DM19-680J	ARCO	1500-16-8000	3
MICA. 820PF. 300V	DM19-821F	ARCO	1500-18-8101	1
ELECT. 22MF. 25V. RA	SRA25V822MAX7LL	UNCDN	1500-22-8002	1
POLYC. 1MF. 100V. AX	B1A105F	ELPAC	1500-41-0004	1
VAR. 3.5-13PF.	78-TRIKO-02 3.5/13PF	TRIKO	1500-61-3000	2
TANT. 1MF. 35V	1500105X9035A2	SPRAG	1500-71-0502	4
TANT F. 33V+/-10% 0. 25LS	1998276X9033PE4	SPRAG	1500-72-7402	2
TANT. 5. 6MF. 35V	1500565X9035B2	SPRAG	1500-75-6502	4
RATOR REF: SPEC 5-00-0435 REV C	149-0386	WVTK	1700-00-0386	1
WALE	60809-2	AMP	2100-09-0000	30

WAVE LOAD 145-3245	ASSEMBLY NO. 1208-00-3246	REV A
	PAGE 2	

WAVETEK PARTS LIST	TITLE PCA. GENERATOR BD 145-S-620	ASSEMBLY NO.

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS & BREAK SHARP EDGES	DRAWN	DATE	WAVETEK
FINISH	CHECKED		TITLE: PARTS LIST PCA, GENERATOR
MATERIAL	ENG APPR		
INTERPRET PER MIL-STD-100	MFG APPR		
NEXT ASSY	QUALITY APPR		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES .XX ± .XXX ±			SIZE: D; DRAW NO.: 23338; DWG NO.: 1100-00-3245; REV: B
NEXT SCALE DRAWING			SCALE: 145-S-620; SHEET 1 OF 3

8 7 2 1

REV	ECN	BY	DATE	APP
A	ECO # 89-262	MS	11/21/89	

YCG AMP

SYMMETRY CONTROL MODEL 143 ONLY

VCG DIAL BUFFER

J1 VCG IN, E1, R1 2K, E2, E3, DIAL 5K, CW, E4, R2 15K, C1 .01, E5 R5 46.4, R3 4.99K, C2 150PF, R4 1K, R9 1.5K, IC1 1/2 MC1458, R8 5.1M ½W 10%, R6 698K ½W NOM, R7 1M 1/4W, C3 .01, E10 10K VERNIER, R11 5.1M ½W 10%, R12 10K, R13 100K, R14 4.99K, C4 .01, C5 .01, -15V, GND

+15V, R16 100K, R17 6.8M ½W 10%, R15 2K, IC2 1/2 MC1458, R18 1.5K, Q1 2N5486, R19 2.49K, R20 4.99K, CR1 FD777, SWI-D, X10M, E8 R21 604, E45, R285 TRIM, R22 4.99K, E15 X.01, CW

R28 2K, C7 .01, IC3 LM741, R26 4.99K, R27 4.99K, C6 .01, SW2, E30 E32 E31 E33, E50 50K SYM, R29 TRIM, J MODEL 145 ONLY, C11 .01, R33 2.49K, IC2 1/2 MC1458, R32 1.5K, Q2 2N5460, R231 2K, R34 4.75K, R35 500, R42 4.02K, R41 10K, IC1 1/2 MC1458, R43 3.01K, R44 604, C16 .01, -15V, GND

POSITIVE CURRENT SOURCE

+24V, R24 10, C10 330PF, R23 1.5K, C8 1µF, C9 .001, R282 TBD, Q4 2N3905, IC4 µA741, R25 249, Q3 2N5460, I+ (2B8)

NEGATIVE CURRENT SOURCE

IC5 µA741, R39 249, Q5 2N5485, C13 .001, C12 1µF, R236 1.5K, R238 10, -24V, Q6 2N3905, R40 604, X10M E10, R283, 24.9K, C14 330PF, R37 4.99K, -15V, CW E13 X.01 SW1-C, GND, I- (2A8)

TRIGGER COMPENSATION

+24, C24 .01, IC6 1/2 MC1458, R60 750, IC6 1/2 MC1458, 2N5462 Q7, COMP OUT (3C1)

J1

SYNC	P1-1
GND	P1-2
+5V	P1-3
TRIG LOGIC	P1-4
STOP/START	P1-5
+15V	P1-6
-15V	P1-7
-24V	P1-8
+24V	P1-9

J10 GCV OUT, E6, E7, GCV AMPLIFIER

CAPACITANCE MULTIPLIER

X10M, SW1-A, R52, 10K, R53, 100K, R54, 1M, 1/4W, R54a 10M 0.6W, 1%, C'N, E11, X.01, SW1-B, CW, E12 X.01, CAP. MULTIPLIER OUT (2A8)

R46 6.98K, R48 1K, +15V, IC7 CA3140, R49 100, C19 1.1% POLYC., R50 10, IC8 CA3140, R57 100, R58 8.25K, R59 82.5, C22 .001, R45 1K, R47 1K, C18 .01, R51 1K, C20 .01, C21 .01, R55 10K, TP, C17 .01, -15V, GND

* * = NOMINAL VALUE CALLED OUT ON P/L.
1 = MATCHED SET OF 3 RESISTORS
2 = MATCHED PAIR OF FD-777 DIODES (OTHER ON SHT. 3 OF 4)
3 = SELECTED COMPONENT
4 = MATCHED SET OF (2) 2N5485
5 = MATCHED SET OF (2) 2N3563
6 = MATCHED SET OF (3) CAPACITORS
7 = MATCHED SET OF (8) FD777 DIODES
4. DIODES ARE FD6666
3. RESISTORS ARE 1/8W, 1% MF
2. CAPACITANCE IN MICROFARADS
1. RESISTANCE IN OHMS

NOTE UNLESS OTHERWISE SPECIFIED

SEE SEPERATE PART LIST 1100-00-0556

REMOVE ALL BURRS AND BREAK SHARP EDGES | DRAWN MELISA SMITH 11/21/89 | WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL | PROJECT | RELEASE APPROVAL | TITLE: SCHEMATIC GENERATOR BOARD
FINISH WAVETEK PROCESS | TOLERANCE UNLESS OTHERWISE SPECIFIED XXX .010 XX .030 ANGLES °1 | DO NOT SCALE DWG | SCALE
MODEL NO 145-S-620 | DWG NO 1104-00-3245 | REV A
COST CODE 23338 | SHEET 1 OF 4

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	CR10-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	A/D GENERATOR BD 145-6-620	1101-00-3245	WVTK	1101-00-3245	1
NONE	SCHEMATIC GENERATOR BD 145-6-620	1104-00-3245	WVTK	1104-00-3245	1
13	PCA. CURRENT LIMITER	143-1008	WVTK	1208-00-1008	1
NONE	KIT. PRE WAVE LOAD 145-3245	1208-00-3246	WVTK	1208-00-3246	1
C49	CAP. CER. 5PF. 1KV	DD-560	CRL	1500-05-6001	1
C37 38 39	CAP SET. POLYC MIXED MATCHED SET	1509-80-0008	BIBND	1509-80-0008	1
J1	CONN 9PIN	09-60-1091	MOLEX	2100-02-0052	1
18	SOCKET. MINIBERT	75060-012	BERG	2100-03-0076	4
NONE	KNOB STD	R3-67-1-63-M	RODAN	2400-01-0008	3
NONE	COAX KNOB SET	R3-67-1-63+0-M-9	RODAN	2400-01-0009	2
NONE	SUPER KIT	2300-0145-01	WVTK	2300-0145-01	1
NONE	HEAT SINK	207	MAKE	2800-11-0001	2
NONE	TRANSIPAD	531-218	BIVAR	2800-11-0004	2
14	HEATSINK	2606SMSE	MAKE	2800-11-0012	2
11	NUT. MACHINE SCREW.	MAS 671C6	CWRCL	2800-50-6100	2

WAVETEK PARTS LIST | TITLE: PCA. GENERATOR BD 145-6-620 | ASSEMBLY NO. 1100-00-3245 | REV B | PAGE 1

REFERENCE DESIGNATORS	PART DESCRIPTION	CR10-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG. CURRENT LIMITER BOARD	0101-00-1008	WVTK	0101-00-1008	1
NONE	SCHEMATIC GENERATOR	0103-00-0356	WVTK	0103-00-0356	1
12	HEATSINK BRACKET	143-5083	WVTK	1400-01-5083	1
NONE	CURRENT LIMITER BD REF: SPEC 0008-00-0455 REV C	143-1008	WVTK	1700-00-1008	1
10	WASHER	3407-150	BESTM	2800-11-0015	2
7	WASHER, LOCK REG. S/S #4	MS 35338-135	CWRCL	2800-45-4000	2
16	LOCK WASHER, INTERNAL TOOTH. SS #4	MS 35333-70	CWRCL	2800-45-4001	1
6	SCREW PLPS PAN H/S 18-8 S/S 4-40X3/8	MS 51957-15	CWRCL	2800-48-4106	3
8	NUT, MACHINE SCREW. 18-8 SS. #4-40	MAS 671C4	CWRCL	2800-50-4100	3
R285 R287	RES. C. 1/2W. 5% 4.7	RC-1/2-4R7J	STKPL	4700-25-0479	2
R284 R286	RES. MF. 1/8W. 1% 100	RN55D-1000F	TRW	4701-03-1000	2
CR47 CR48 CR49 CR50	DIODE. ZENER. 10V	1N758A	FAIR	4801-01-0738	4
U13	VOLT REGULATOR. 3 TERMINAL ADJUSTABLE	LM317T	NSC	7000-03-1700	1

WAVETEK PARTS LIST | TITLE: PCA. CURRENT LIMITER | ASSEMBLY NO. 1208-00-1008 | REV B | PAGE 1

REFERENCE DESIGNATORS	PART DESCRIPTION	CR10-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY DRWG GENERATOR	0101-00-0356	WVTK	0101-00-0356	1
NONE	SCHEMATIC GENERATOR	0103-00-0356	WVTK	0103-00-0356	1
C55	CAP. CER. 5PF. 1KV	DD-050 LONG LEAD	CRL	1500-00-5001	1
C108T C61 C76 C77	CAP. CER DISK. 5PF. 1KV. 10Z	0311-00018	WVTK	1500-00-5011	4
C59 C82	CAP. CER. 10PF. 1KV	DD-100	CRL	1500-01-0011	2
C102 C87	CAP. CER. 100PF. 1KV	DD-101	CRL	1500-01-0111	2
C13 C22 C9	CAP. CER.. .001UF. 1KV	DD-102	CRL	1500-01-0211	3
C1 C101 C103 C104 C11 C110 C16 C17 C18 C20 C21 C24 C27 C29 C3 C30 C32 C33 C4 C42 C43 C44 C5 C53 C54 C56 C57 C58 C6 C60 C62 C63 C66 C68 C7 C71 C72 C73 C74 C75 C80 C81 C83 C84 C89 C90 C92	CAP CER MON . 01MF 50V. AXIAL	CAC022SU103Z100A	CORNO	1500-01-0310	47
C105 C106 C107 C109 C67 C78 C79 C85 C86 C88 C91 C93 C94	CAP. CER. MON. 1MF. 50V. AXIAL	CAC032SU104Z050A	CORNO	1500-01-0405	13
C2	CAP. CER. 130PF. 1KV	DD-131	CRL	1500-01-3111	1
C10 C14	CAP. CER. 330PF. 1KV	DD-331	CRL	1500-03-3111	2
C26	CAP. MICA. 100PF. 500V	DM15-101J	ARCO	1500-11-0100	1
C25	CAP. MICA. 15PF. 500V	DM15-150J	ARCO	1500-11-5000	1

WAVETEK PARTS LIST | TITLE: KIT. PRE WAVE LOAD 145-3245 | ASSEMBLY NO. 1208-00-3246 | REV A | PAGE 1

REFERENCE DESIGNATORS	PART DESCRIPTION	CR10-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
	18-8 SS. #4-32 SMALL PATTERN				
Q44	TRANS	2N3866	MOT	4901-03-8660	1
Q45	TRANS	2N5160-18	MOT	4901-05-1600	1

WAVETEK PARTS LIST | TITLE: PCA. GENERATOR BD 145-6-620 | ASSEMBLY NO. 1100-00-3245 | REV B | PAGE 2

REFERENCE DESIGNATORS	PART DESCRIPTION	CR10-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
U12	POS VOLT REGULATOR	LM337T	NSC	7000-03-3700	1

WAVETEK PARTS LIST | TITLE: PCA. CURRENT LIMITER | ASSEMBLY NO. 1208-00-1008 | REV B | PAGE 2

REFERENCE DESIGNATORS	PART DESCRIPTION	CR10-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
C28 C31 C99T	CAP. MICA. 220PF. 500V. RADIAL	DM19-221J	ARCO	1500-12-2100	3
C41T.	CAP. MICA. 30PF. 500V. RADIAL	DM19-300J	ARCO	1500-13-0000	1
C46 C51	CAP. MICA. 47PF. 300V	DM19-470J	ARCO	1500-14-7000	2
C47 C50 NONE	CAP. MICA. 68PF. 300V	DM19-680J	ARCO	1500-16-8000	3
C36	CAP. MICA. 820PF. 300V	DM19-821F	ARCO	1500-18-8101	1
C49	CAP. ELECT. 22MF. 25V. RADIAL.	ERA25VB22M6X7LL	UNCON	1500-22-6002	1
C19	CAP. POLYC. 1MF. 100V. AXIAL.	B1A105F	ELPAC	1500-41-0004	1
C34 C40	CAP. VAR. 3.5-13PF. 250V	76-TRIMO-02 3.5/13PF	TRIMO	1500-51-5000	2
C12 C8 C96 C97	CAP. TANT. 1MF. 35V	150D105X9035A2	SPRAG	1500-71-6002	4
C95 C98	CAP. TANT 47UF. 20%+/-10% 0. 25LS	199D276X9035FE4	SPRAG	1500-72-7A02	2
C111 C112 C64 C65	CAP. TANT. 0. 6MF. 35V	150D654X9035B2	SPRAG	1500-79-6A02	4
NONE	GENERATOR REF: SPEC 0001-00-0455 REV C	149-0586	WVTK	1700-00-0586	1
NONE	PIN. MALE	60809-2	AMP	2100-09-0000	30

WAVETEK PARTS LIST | TITLE: KIT. PRE WAVE LOAD 145-3245 | ASSEMBLY NO. 1208-00-3246 | REV A | PAGE 2

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES			
DO NOT SCALE DRAWING			

WAVETEK

TITLE: PARTS LIST PCA, GENERATOR

SIZE	FSCM NO.	DWG NO.	REV
D	23338	1100-00-3245	B
SCALE	145-S-620	SHEET 1 OF 3	

REV	ECO	BY	DATE	APP

-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
-21R5F	TRW	4701-03-2139	2
-2372F	TRW	4701-03-2372	2
-2490F	TRW	4701-03-2490	11
-2491F	TRW	4701-03-2491	12
-2492F	TRW	4701-03-2492	4
-2749F	TRW	4701-03-2749	1
-3011F	TRW	4701-03-3011	4
-3013F	TRW	4701-03-3013	2
-3160F	TRW	4701-03-3160	5
-3329F	TRW	4701-03-3329	22
-3571F	TRW	4701-03-3571	2
-3691F	TRW	4701-03-3691	5
-3920F	TRW	4701-03-3920	4
-4021F	TRW	4701-03-4021	2

REFERENCE DESIGNATORS	PART DESCRIPTION	CR10-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
R133 R136 R138 R160 R164 R261 R266 R77 R78	RES. MF. 1/8W. 1%. 7.5K	RN55D-7501F	TRW	4701-03-7501	9
R134	RES. MF. 1/8W. 1%. 76.8K	RN55D-7682F	TRW	4701-03-7682	1
R125	RES. MF. 1/8W. 1%. 825	RN55D-8250F	TRW	4701-03-8250	1
R238 R249 R58	RES. MF. 1/8W. 1%. 8.25K	RN55D-8251F	TRW	4701-03-8251	3
R197T R208T R59	RES. MF. 1/8W. 1%. 82.5	RN55D-82R5F	TRW	4701-03-8259	3
R122 R228	RES. MF. 1/8W. 1%. 909	RN55D-9090F	TRW	4701-03-9090	2
R271	RES. MF. 1/8W. 1%. 90.9	RN55D-90R9F	TRW	4701-03-9099	1
R7	RES. MF. 1/4W. 1%. 1M	RN60D-1004F	TRW	4701-13-1004	1
R233	RES. MF. 1/4W. 1%. 121	RN60D-1210F	TRW	4701-13-1210	1
R229	RES. MF. 1/4W. 1%. 124	RN60D-1240F	TRW	4701-13-1240	1
R173	RES. MF. 1/4W. 1%. 49.9	RN60D-49R9F	TRW	4701-13-4999	1
R6T	RES. MF. 1/4W. 1%. 698K	RN60D-6983F	TRW	4701-13-6983	1
R224 R225 R226 R227	RES. MF. 1/2W. 1%. 49.9	RN65D-49R9F	TRW	4701-23-4999	4
R52 R53 R54	RES. MF. MIXED SET	4789-00-0043	IRC	4789-00-0043	1
R56	RES. MF.. 4W. 1%. 10M	ML-181	CADDO	4799-00-0003	1
17	RES. 0 OHM JUMPER	JP02T680	RCHM	4799-00-0087	10

WAVETEK PARTS LIST

TITLE
KIT. PRE WAVE LOAD 145-3245

-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
-4640F	TRW	4701-03-4640	4
-4642F	TRW	4701-03-4642	1
-4649F	TRW	4701-03-4649	1
-4731F	TRW	4701-03-4731	1
-4990F	TRW	4701-03-4990	2
-4991F	TRW	4701-03-4991	10
-4992F	TRW	4701-03-4992	1
-5499F	TRW	4701-03-5499	2
-5629F	TRW	4701-03-5629	1
-5760F	TRW	4701-03-5760	3
-6040F	TRW	4701-03-6040	5
-6199F	TRW	4701-03-6199	7
-6810F	TRW	4701-03-6810	2
-6981F	TRW	4701-03-6981	1
-7500F	TRW	4701-03-7500	5

REFERENCE DESIGNATORS	PART DESCRIPTION	CR10-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
CR3 CR23 CR4 CR5	DIODE, ZENER, 6.2V. IN823	1N822A	MOT	4801-01-0823	4
CR16	DIODE, REFERENCE, LOW LEVEL, TEMP COMP	1N4581	MICRO	4801-01-4581	1
CR19 CR28 CR29 CR30 CR31 CR6 CR7 CR8 CR9	DIODE, ULTRA FAST	1N4244	T/CSF	4807-02-0777	9
CR1 CR10 CR11 CR14 CR15 CR17 CR18 CR20 CR21 CR22 CR23 CR24 CR25 CR27 CR32 CR34 CR35 CR36 CR37 CR46	DIODE 1N4148 COMPUTER, G/P, 75V, 200M A, SWITCHING	1N4148	FAIR	4807-02-4444	20
CR12 CR13	DIODE 5082-2811 SCHOTTKY, 15V, 20MA	5082-2811	HP	4809-02-2811	2
CR2 26	DIODE, M/PR, FD-777 QTY: 2: 4807-02-0777	4898-00-0004	ELD	4898-00-0004	1
CR38 39 40 41 42 43 44 45	DIODE, SET, 8-FD-777 QTY: 8: 4807-02-0777	4898-00-0010	ELD	4898-00-0010	1
Q42	TRANS 2N2219A NPN GENERAL PURPOSE TO-5	2N2219A	MSC	4901-02-2191	1
Q43	TRANS 2N2905A PNP GENERAL PURPOSE TO-5	2N2905A	MSC	4901-02-9051	1
Q12 Q34 Q50	TRANS. NPN. TO-92	2N3563	FAIR	4901-03-3630	3
Q15 Q16 Q37 Q49	TRANS. PNP. TO-92	MPS2640	MOT	4901-03-6400	4

WAVETEK PARTS LIST

TITLE
KIT. PRE WAVE LOAD 145-3245

REMOVE ALL BURRS AND BREAK SHARP EDGES
MATERIAL
FINISH: WAVETEK PROCESS
DO NOT SCALE DRAWING
DRAWN DATE
CHECKED
ENGR. APPR.
MFG APPR.
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS .XX ± .XXX ± ANGLES ±

WAVETEK

TITLE
PARTS LIST
PCA, GENERATOR

SIZE	DRAWING NO.	DWG. NO.	REV
D	23338	1100-00-3245	B

SCALE | 145-S-620 | SHEET 2 OF 3

REV	ECO	BY	DATE	APP

RT DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
SY. SWITCH SW-1 5-0536	145-1565	WVTK	1202-00-1565	1
SY. SWITCH SW-2 5-0536	145-1566	WVTK	1202-00-1566	1
SY. SWITCH SW-3 5-0536	145-1567	WVTK	1202-00-1567	1
SY. SWITCH SW-4 5-0536	145-1568	WVTK	1202-00-1568	1
SY. SWITCH SW-5 5-0536	145-1569	WVTK	1202-00-1569	1

KIT	ASSEMBLY NO. 2500-0145-01	REV
	PAGE 1	

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE
MATERIAL	CHECKED	
	PROJ. ENGR	
	RELEASE APPROV	
FINISH WAVETEK PROCESS	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ± .XX ± .XXX ± °	
DO NOT SCALE DRAWING		

WAVETEK San Diego, California

TITLE: PARTS LIST PCA, GENERATOR

SIZE	FSCM NO.	DWG. NO.	REV
D	23338	1100-00-3245	B

SCALE | 145-S-620 | SHEET 3 OF 3

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	TRANSIPAD	10123N	METRS	2800-11-0003	2
NONE	TRANSIPAD	531-218	BIVAR	2800-11-0004	2
FB1	FERRITE BEAD	36-990-43/3B	FERRI	3100-00-0001	1
R4 R48	POT. TRIM. 1K	91AR1K	BECK	4600-01-0209	2
R12 R162 R35	POT. TRIM. 10K	91AR10K	BECK	4600-01-0313	3
R13 R14 R181 R252	POT. TRIM. 100K	91AR100K	BECK	4600-01-0402	4
R120	POT. TRIM. 200	91AR200	BECK	4600-02-0101	1
R107 R35 R43	POT. TRIM. 500	91AR500	BECK	4600-05-0104	3
R11 R8	RES. C. 1/2W. 10% 5. 1K	RC-1/2-515J	STKPL	4700-25-5104	2
R17	RES. C. 1/2W. 10% .6 UH			4700-25-6804	1
R118 R134 R127 R128 R129 R142 R145 R149 R150 R158 R174 R180 R214 R216 R49 R57 R73	RES. MF. 1/8W. 1% 100	RN55D-1000F	TRW	4701-03-1000	17
R104 R108 R111 R155 R165 R168 R200 R257 R45 R47 R51 R94 R98 R99	RES. MF. 1/8W. 1% 1K	RN55D-1001F	TRW	4701-03-1001	14
R112 R146 R203 R245 R41	RES. MF. 1/8W. 1% 10K	RN55D-1002F	TRW	4701-03-1002	5
R116 R123 R139 R141 R172	RES. MF. 1/8W. 1% 10	3043ED10R100F	WEPCO	4701-03-1009	18

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
R166 R170	RES. MF. 1/8W. 1% 21. 5	RN55D-21R5F	TRW	4701-03-2159	2
R237 R248	RES. MF. 1/8W. 1% 23. 7K	RN55D-2372F	TRW	4701-03-2372	2
R102 R137 R144 R159 R186 R230 R242 R245 R25 R242 R39	RES. MF. 1/8W. 1% 249	RN55D-2490F	TRW	4701-03-2490	11
R147 R151 R156 R171 R188 R189 R19 R234 R235 R274 R278 R33	RES. MF. 1/8W. 1% 2. 49K	RN55D-2491F	TRW	4701-03-2491	12
R161 R213 R281 R283	RES. MF. 1/8W. 1% 24. 9K	RN55D-2492F	TRW	4701-03-2492	4
R187T	RES. MF. 1/8W. 1% 27. 4	RN55D-27R4F	TRW	4701-03-2749	1
R150 R177 R178 R43	RES. MF. 1/8W. 1% 3. 01K	RN55D-3011F	TRW	4701-03-3011	4
R131 R256	RES. MF. 1/8W. 1% 301K	RN55D-3013F	TRW	4701-03-3013	2
R134 R67 R71 R88 R89	RES. MF. 1/8W. 1% 316	RN55D-3160F	TRW	4701-03-3160	5
R101 R103 R109 R110 R119 R126 R130 R140 R192 R204 R253 R269 R272 R65 R68 R69 R72 R75 R76 R79 R82 R95	RES. MF. 1/8W. 1% 33. 2	RN55D-33R2F	TRW	4701-03-3329	22
R100T R105T	RES. MF. 1/8W. 1% 3. 57K	RN55D-3571F	TRW	4701-03-3571	2
R191 R202 R258 R80 R83	RES. MF. 1/8W. 1% 3. 65K	RN55D-3651F	TRW	4701-03-3651	5
R115 R193 R194 R195	RES. MF. 1/8W. 1% 392	RN55D-3920F	TRW	4701-03-3920	4
R199 R42	RES. MF. 1/8W. 1% 4. 02K	RN55D-4021F	TRW	4701-03-4021	2

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
R133 R136 R138 R160 R164 R261 R266 R77 R78	RES. MF. 1/8W. 1% 7. 5K	RN55D-7501F	TRW	4701-03-7501	9
R134	RES. MF. 1/8W. 1% 76. 8K	RN55D-7682F	TRW	4701-03-7682	1
R125	RES. MF. 1/8W. 1% 825	RN55D-8250F	TRW	4701-03-8250	1
R238 R249 R36	RES. MF. 1/8W. 1% 8. 25K	RN55D-8251F	TRW	4701-03-8251	3
R197T R208T R39	RES. MF. 1/8W. 1% 82. 5	RN55D-82R5F	TRW	4701-03-82R5	3
R122 R228	RES. MF. 1/8W. 1% 909	RN55D-9090F	TRW	4701-03-9090	2
R271	RES. MF. 1/8W. 1% 90. 9	RN55D-90R9F	TRW	4701-03-9099	1
R7	RES. MF. 1/4W. 1% 1M	RN60D-1004F	TRW	4701-13-1004	1
R233	RES. MF. 1/4W. 1% 121	RN60D-1210F	TRW	4701-13-1210	1
R229	RES. MF. 1/4W. 1% 124	RN60D-1240F	TRW	4701-13-1240	1
R175	RES. MF. 1/4W. 1% 49. 9	RN60D-49R9F	TRW	4701-13-4999	1
R6T	RES. MF. 1/4W. 1% 698K	RN60D-6983F	TRW	4701-13-6983	1
R224 R225 R226 R227	RES. MF. 1/2W. 1% 49. 9	RN65D-49R9F	TRW	4701-23-4999	4
R32 R33 R34	RES. MF. MIXED SET	4789-00-0043	IRC	4789-00-0043	1
R36	RES. MF. . 4W. 1% 10M	RL-181	CAMBO	4799-00-0003	1
17	RES. 0 OHM JUMPER	JP027680	ROHM	4799-00-0087	10

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
R173 R196 R210 R226T R34 R272 R28 R30 R41 R44 R74 R81 R84					
R211 R212	RES. MF. 1/8W. 1% 1. 1K	RN55D-1101F	TRW	4701-03-1101	2
R229 R240 R250 R251	RES. MF. 1/8W. 1% 11K	RN55D-1102F	TRW	4701-03-1102	4
R96 R97	RES. MF. 1/8W. 1% 1. 21K	RN55D-1211F	TRW	4701-03-1211	2
R114 R241 R247 R46	RES. MF. 1/8W. 1% 130	RN55D-1300F	TRW	4701-03-1300	4
R113 R176 R18 R198 R23 R267 R32 R36 R42 R43 R9	RES. MF. 1/8W. 1% 1. 5K	RN55D-1501F	TRW	4701-03-1501	11
R132 R163 R2	RES. MF. 1/8W. 1% 15K	RN55D-1502F	TRW	4701-03-1502	3
R182	RES. MF. 1/8W. 1% 150K	RN55D-1503F	TRW	4701-03-1503	1
R218 R219 R220 R221	RES. MF. 1/8W. 1% 19	RN55D-19R0F	TRW	4701-03-1909	4
R263T	RES. MF. 1/8W. 1% 17. 4K	RN55D-1742F	TRW	4701-03-1742	1
R169	RES. MF. 1/8W. 1% 1. 78K	RN55D-1781F	TRW	4701-03-1781	1
R184	RES. MF. 1/8W. 1% 1. 96K	RN55D-1961F	TRW	4701-03-1961	1
R179	RES. MF. 1/8W. 1% 200	RN55D-2000F	TRW	4701-03-2000	1
R1 R13 R183 R209 R28 R31	RES. MF. 1/8W. 1% 3K	RN55D-3001F	TRW	4701-03-3001	6
R143	RES. MF. 1/8W. 1% 215	RN55D-2150F	TRW	4701-03-2150	1

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
R106 R205 R206 R207	RES. MF. 1/8W. 1% 464	RN55D-4640F	TRW	4701-03-4640	4
R201	RES. MF. 1/8W. 1% 46. 4K	RN55D-4642F	TRW	4701-03-4642	1
R5	RES. MF. 1. 8W. 1% 46. 4	RN01D-46R4F	TRW	4701-03-4649	1
R24	RES. MF. 1/8W. 1% 4. 75K	RN55D-4751F	TRW	4701-03-4751	1
R231 R259	RES. MF. 1/8. 1% 499	RN55D-4990F	TRW	4701-03-4990	2
R117 R14 R152 R20 R22 R232 R26 R27 R3 R37	RES. MF. 1/8W. 1% 4. 99K	RN55D-4991F	TRW	4701-03-4991	10
R157	RES. MF. 1/8W. 1% 49. 9K	RN55D-4992F	TRW	4701-03-4992	1
R85T R92T	RES. MF. 1/8W. 1% 54. 9	RN55D-54R9F	TRW	4701-03-5499	2
R255	RES. MF. 1/8W. 1% 56. 2	RN55D-56R2F	TRW	4701-03-5629	1
R148T R243 R246	RES. MF. 1/8W. 1% 576	RN55D-5760F	TRW	4701-03-5760	3
R21 R40 R44 R86 R91	RES. MF. 1/8W. 1% 604	RN55D-6040F	TRW	4701-03-6040	5
R215 R217 R234 R244 R260 R268 R275	RES. MF. 1/8W. 1% 61. 9	RN55D-61R9F	TRW	4701-03-6199	7
R264 R270	RES. MF. 1/8W. 1% 681	RN55D-6810F	TRW	4701-03-6810	2
R44	RES. MF. 1/8W. 1% 6. 98K	RN55D-6981F	TRW	4701-03-6981	1
R120 R167 R190 R60 R70	RES. MF. 1/8W. 1% 750	RN55D-7500F	TRW	4701-03-7500	5

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
CR3 CR33 CR4 CR5	DIODE, ZENER, 6. 2V, 1N823	1N823A	MOT	4801-01-0823	4
CR16	DIODE, REFERENCE, LOW LEVEL, TEMP COMP	1N4381	NICRO	4801-01-4381	1
CR19 CR28 CR29 CR30 CR31 CR6 CR7 CR8 CR9	DIODE, ULTRA FAST	1N4244	T/CSF	4807-08-0777	9
CR1 CR10 CR11 CR14 CR15 CR17 CR18 CR20 CR21 CR22 CR23 CR24 CR25 CR27 CR32 CR34 CR35 CR36 CR37 CR46	DIODE 1N4148 COMPUTER, 0/P. 75V. 200M A. SWITCHING	1N4148	FAIR	4807-02-4444	30
CR12 CR13	DIODE 5082-2811 SCHOTTKY. 15V. 20MA	5082-2811	HP	4809-02-2811	2
CR2 36	DIODE, R/PR. FD-777 QTY: 2: 4807-02-0777	4898-00-0004	ELB	4898-00-0004	1
CR38 39 40 41 42 43 44 45	DIODE, SET, 8-FD-777 QTY: 8: 4807-02-0777	4898-00-0010	ELB	4898-00-0010	1
Q42	TRANS 2N2219A NPN GENERAL PURPOSE TO-5	2N2219A	MOT	4901-02-2191	1
Q43	TRANS 2N2905A PNP GENERAL PURPOSE TO-5	2N2905A	MOT	4901-02-4091	1
Q12 Q26 Q30	TRANS. NPN. TO-92	2N3563	FAIR	4901-03-8430	3
Q15 Q16 Q27 Q49	TRANS. PNP. TO-92	MPS2640	MOT	4901-03-6400	4

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES | MATERIAL | FINISH: WAVETEK PROCESS | DRAWN | DATE | CHECKED | ENGR. APPR. | MFG APPR. | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ±1/64 ANGLES ± .XX ± .XXX ± | DO NOT SCALE DRAWING

WAVETEK

TITLE: PARTS LIST PCA, GENERATOR

SIZE	FSCM NO.	DWG NO.	REV
D	23338	1100-00-3245	B
SCALE		145-S-620	SHEET 2 OF 3

REV	ECO	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
Q39	TRANS	2N3866	MOT	4901-03-8660	1
Q13 Q21 Q22 Q25 Q27 Q28 Q29 Q31 Q40 Q6	TRANS. GENERAL PURPOSE, NPN. TO-92	2N3903	NSC	4901-03-9030	10
Q10 Q11 Q14 Q17 Q19 Q23 Q24 Q26 Q30 Q32 Q33 Q34 Q4 Q41 Q46 Q47 Q51	TRANS. GENERAL PURPOSE, PNP, TO-92	2N3905	ITT	4901-03-9050	17
Q36	TRANS	2N5160-18	MOT	4901-05-1600	1
Q3	TRANS. P-CHANNEL JFETS	2N5460	MOT	4901-05-4600	1
Q5	TRANS. N-CHANNEL JFETS	2N5485	MOT	4901-05-4850	1
Q1	TRANS N-CHANNEL JFETS	2N5486	MOT	4901-05-4860	1
Q18 20	TRANS. M/PR. 2N3563 QTY: 2: 4901-03-5630	4998-00-0004	KLG	4998-00-0004	1
Q2 Q7	TRANS. SEL. 2N5462 QTY: 1: 4901-05-4620	4998-00-0008	KLG	4998-00-0008	2
Q8 9	TRANS. M/PR. 2N5485 QTY: 2: 4901-05-4850	4998-00-0009	KLG	4998-00-0009	1
IC4 IC5	OP AMP, LOWOFFSET/DRIFT JFET INPUT TIONAL AMPLI	LF411CN	NSC	7000-04-1100	2
IC3	OP AMP, INTERNALLY COMP, HIGH	LM741CN	NSC	7000-07-4100	1

WAVETEK PARTS LIST	TITLE KIT, PRE WAVE LOAD 145-3245	ASSEMBLY NO. 1208-00-3246	REV A
		PAGE 9	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	ASSY, SWITCH SW-1 145-0556	145-1565	WVTK	1202-00-1565	1
NONE	ASSY, SWITCH SW-2 145-0556	145-1566	WVTK	1202-00-1566	1
NONE	ASSY, SWITCH SW-3 145-0556	145-1567	WVTK	1202-00-1567	1
NONE	ASSY, SWITCH SW-4 145-0556	145-1568	WVTK	1202-00-1568	1
NONE	ASSY, SWITCH SW-5 145-0556	145-1569	WVTK	1202-00-1569	1

WAVETEK PARTS LIST	TITLE SUPER KIT	ASSEMBLY NO. 2500-0145-01	REV
		PAGE 1	

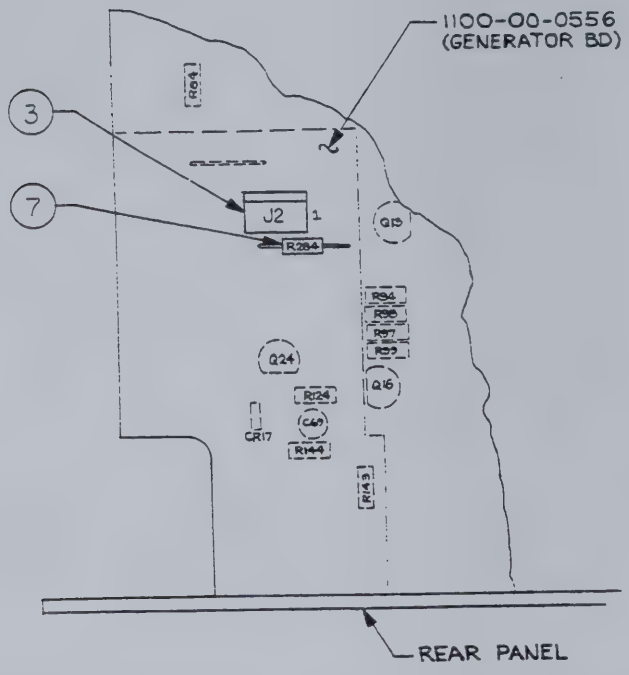
REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
	PERFORMANCE				
Q35 Q48	TRANS. MONO. DUAL. NPN	LS312-52	LINSY	7000-08-1200	2
IC1 IC2 IC6	OP AMP, DUAL, HIGH GAIN, INTERNALLY COMP	MC1458P1	MOT	7000-14-3800	3
IC9	DIFFERENTIAL AMP, DUAL HIGH FREQ	CA3049T	RCA	7000-30-4900	1
IC7 IC8	OP AMP, BIMOS MOSFET INPUT/BIPOLAR OUTPUT	CA3140E	RCA	7000-31-4001	2

WAVETEK PARTS LIST	TITLE KIT, PRE WAVE LOAD 145-3245	ASSEMBLY NO. 1208-00-3246	REV A
		PAGE 10	

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE	WAVETEK San Diego, California
MATERIAL	CHECKED		TITLE PARTS LIST PCA, GENERATOR
	PROJ. ENGR		
FINISH WAVETEK PROCESS	RELEASE APPROV		
DO NOT SCALE DRAWING	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES .XX ± .XXX ± ±		SIZE D | PSCM NO. 23338 | Dwg. NO. 1100-00-3245 | REV B SCALE | 145-S-620 | SHEET 3 OF 3

REV	ECN	BY	DATE	APP



DETAIL A
SCALE 2:1

1 MODEL 145-STD

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	INSTALLATION DWG	0102-00-0221	WVTK	0102-00-0221	1
1	MODEL 145 20MHZ PULSE FUNCTIONGENERATOR	145-STD	WVTK	1000-00-0101	1
2	LABEL, OPTION	270-4960	WVTK	1400-01-4960	1
3	CONN HEADER 3 PIN	640456-3	AMP	2100-02-0116	1
4	HEADER, CONN 3 PIN	640440-3	AMP	2100-02-0117	1
5	INDICATOR, ELAPSED TIME (5000 HR)	T-000-4	FRED	2400-06-0006	1
6	HOLDER, TIMER	T-102	FRED	2400-06-0007	1
7	RES, MF, 1/8W, 1%, 2.15M	RN55D2154F	TRW	4701-03-2154	1

WAVETEK PARTS LIST

TITLE: MODEL 145-001 OPTION 5000 HOUR TIMER

ASSEMBLY NO. 1000-00-0221

REV

PAGE 1

0102-00-0221

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN S.MA...LIA	DATE 7-5-2	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL — //	PROJ ENGR		TITLE: MODEL 145-001 OPTION 5000 HOUR TIMER
	RELEASE APPROV		
FINISH WAVETEK PROCESS — //	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX: .010 ANGLES: 1 XX: .030		
	DO NOT SCALE DWG	MODEL NO 145-001 145-S-872	DWG NO 0102-00-0221 REV
	SCALE — //	CODE IDENT 23338	SHEET 1 OF 1

REV	ECN	BY	DATE	APP
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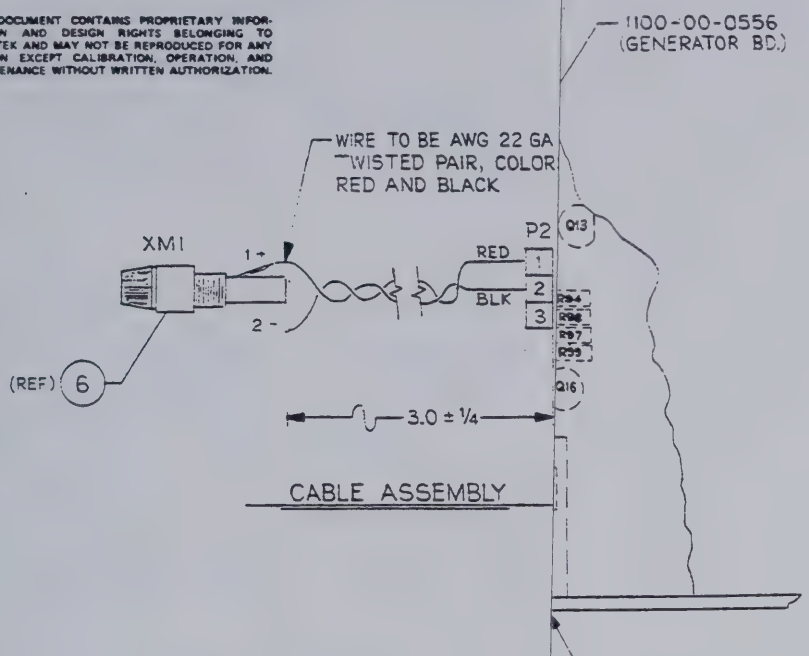
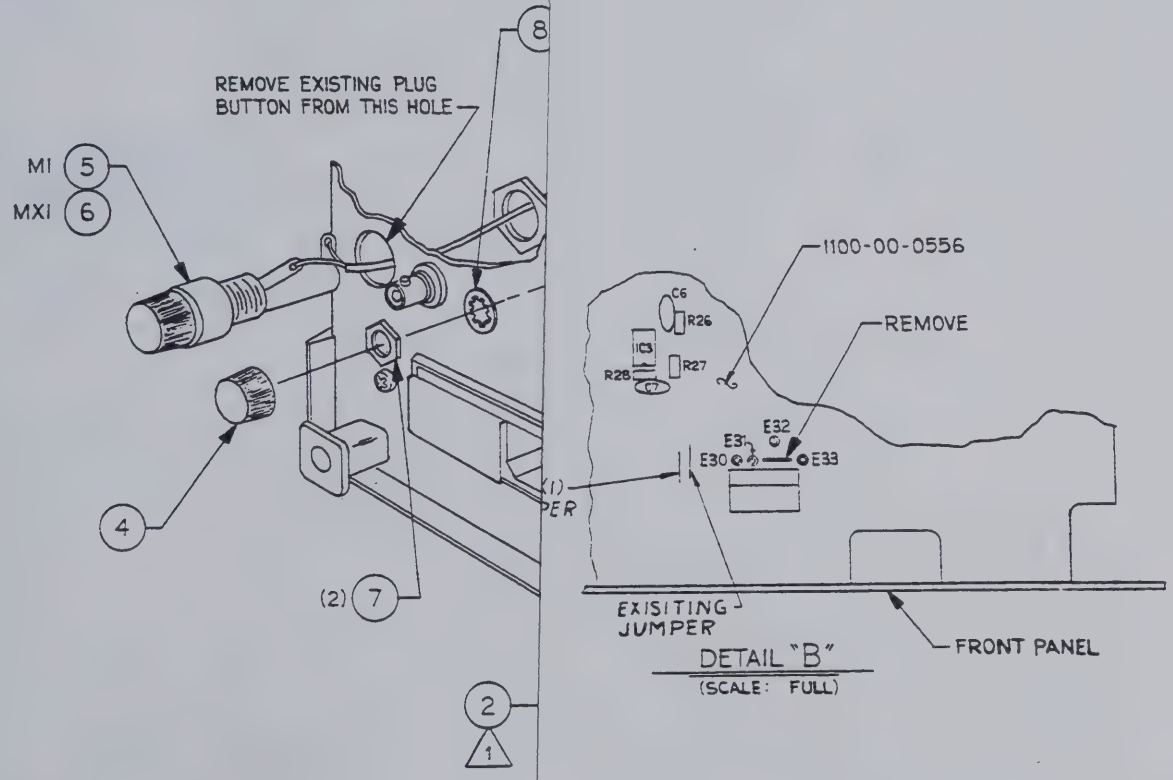
5	220-			





SEE SEPARATE PARTS LIST 1000-00-0442

3. UPON COMPLETION OF CALIBRATION AND QUALITY CONTROL ACCEPTANCE APPLY SIGNED CALIBRATION LABEL IN AREA INDICATED.

2. REMOVE REAR PANEL 1400-00-6760 FROM FUNCTION GENERATOR 1000-00-0101 AND DRILL A .375 HOLE PER 1400-02-0603 AND SILKSCREEN REAR PANEL PER 1400-02-0600. REASSEMBLE REAR PANEL.

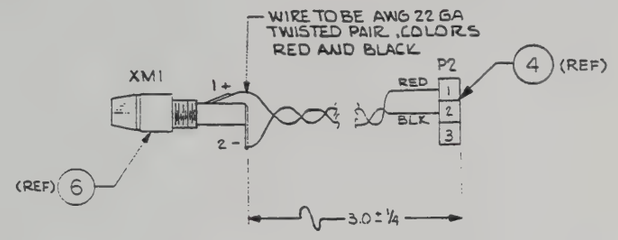
1. MARK LABEL FOR OPTION 003.

NOTE: UNLESS OTHERWISE SPECIFIED

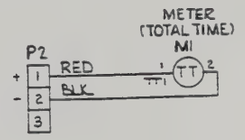
REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN A. TALMADGE	DATE 3/17/82	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL —	PROJENG D.E. FISH	3/17/82	TITLE: MODEL 145-003 OPTION 5000 HOUR TIMER & SYMMETRY CONTROL
	RELEASE APPROV		
FINISH WAVETEK PROCESS —	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ± .010 ANGLES ±1° XX ± .030		
	DO NOT SCALE DWG		MODEL NO 145-003 145-S-1021 — DWG NO 0102-00-0442 — REV B
	SCALE NONE		CODE IDENT 23338 — SHEET 1 OF 1

0102-00-0442 B

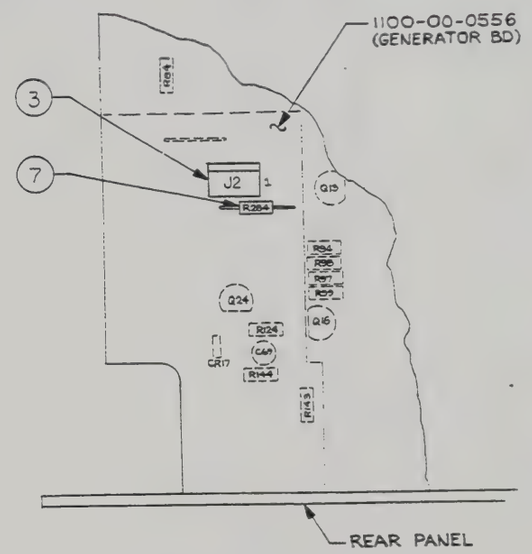
REV	ECN	BY	DATE	APP



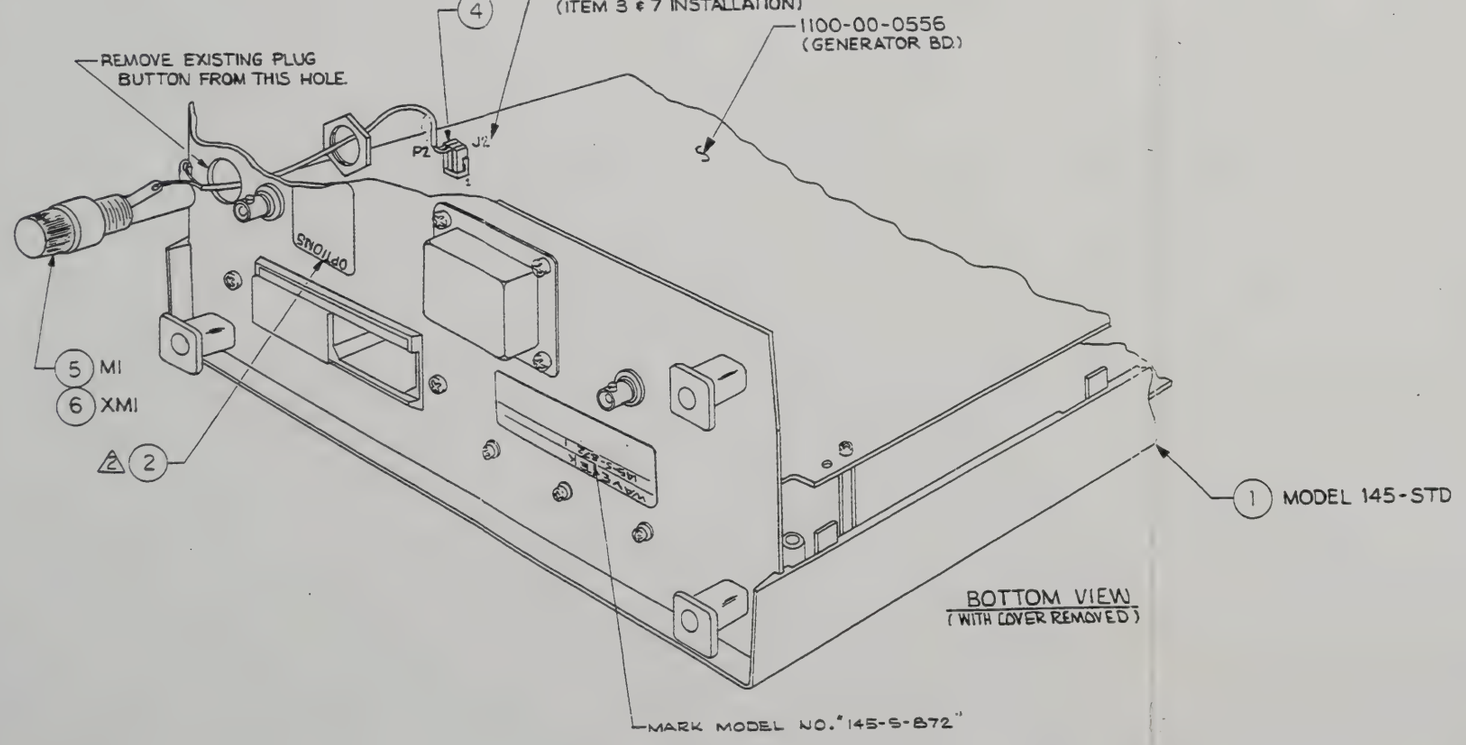
CABLE ASSEMBLY



SCHEMATIC



DETAIL A
SCALE 2:1



BOTTOM VIEW
(WITH COVER REMOVED)

REFERENCE DESIGNATORS	PART DESCRIPTION	DRIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	INSTALLATION DWG	0102-00-0221	WVTK	0102-00-0221	1
1	MODEL 145 20MHZ PULSE FUNCTION GENERATOR	145-STD	WVTK	1000-00-0101	1
2	LABEL, OPTION	270-4960	WVTK	1400-01-4960	1
3	CONN HEADER 3 PIN	640436-3	AMP	2100-02-0116	1
4	HEADER, CONN 3 PIN	640440-3	AMP	2100-02-0117	1
5	INDICATOR, ELAPSED TIME (5000 HR)	T-000-4	FRED	2400-06-0006	1
6	HOLDER, TIMER	T-102	FRED	2400-06-0007	1
7	RES, MF, 1/8W, 1%, 2.15M	RN55D2154F	TRW	4701-03-2154	1

WAVETEK PARTS LIST	TITLE: MODEL 145-001 OPTION 5000 HOUR TIMER	ASSEMBLY NO.: 1000-00-0221	REV
		PAGE 1	

⚠2 MARK LABEL FOR OPTION 001.

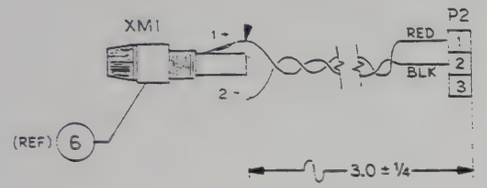
1. FOR PARTS LIST SEE 1000-00-0221

NOTE UNLESS OTHERWISE SPECIFIED

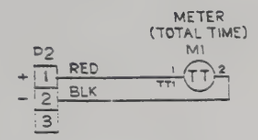
REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN: S. MA...LA	DATE: 7-82	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL: --	PROJ ENGR		TITLE: MODEL 145-001 OPTION 5000 HOUR TIMER
	RELEASE APPROV		
FINISH: WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED: XXX ± .010, XX ± .030, ANGLES ± 1		
--	DO NOT SCALE DWG	MODEL NO: 145-001, 145-S-872	DWG NO: 0102-00-0221 REV
	SCALE --	CODE IDENT: 23338	SHEET 1 OF 1

0102-00-0221

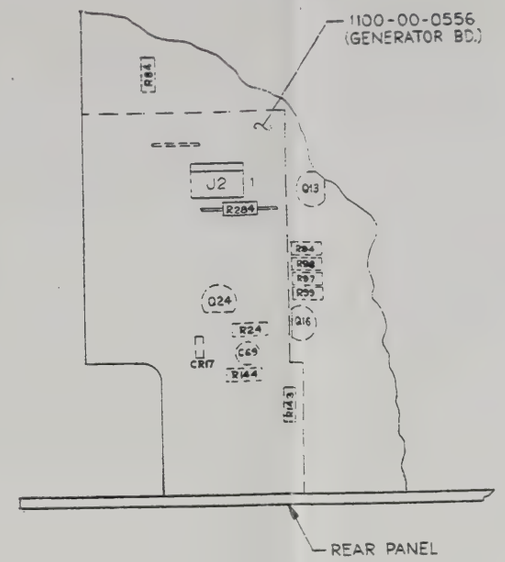
REV	ECN	BY	DATE	APP
A	8155			
5	[illegible]			



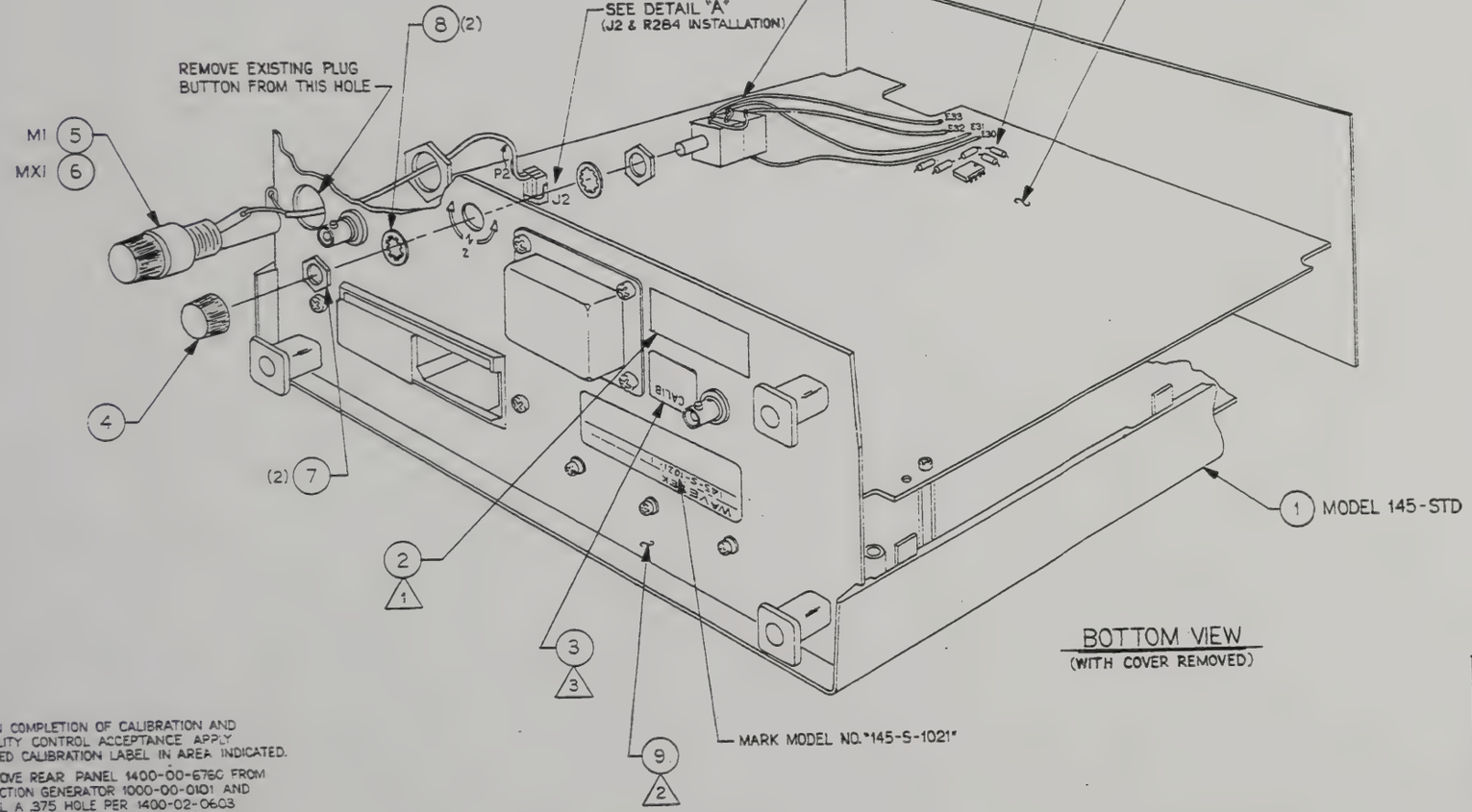
CABLE ASSEMBLY



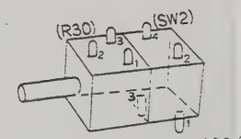
SCHEMATIC



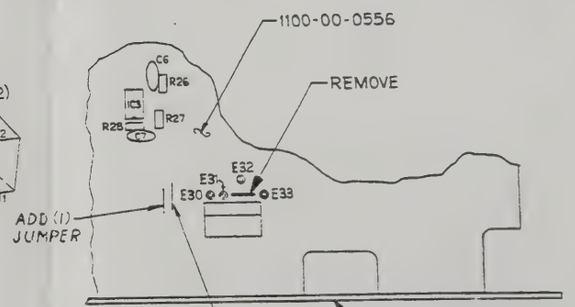
DETAIL "A"
(SCALE 2:1)



BOTTOM VIEW
(WITH COVER REMOVED)



DETAIL "C"



DETAIL "B"
(SCALE: FULL)

WIRE CHART			
FROM	TO	WIRE COLOR 22 GA	LENGTH
R30-1	SW2-4	BARE	0.5
SW2-4	E31	RED	9.0
R30-2	SW2-2	ORN	1.0
SW2-2	E32	ORN	9.0
R30-3	SW2-3	YEL	1.5
SW2-3	E33	YEL	9.0
SW2-1	E30	BRN	9.0

SEE SEPARATE PARTS LIST 1000-00-0442

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN A. TALMADGE 3/17/82	WAVETEK SAN DIEGO, CALIFORNIA	
MATERIAL —	PROJECT D.E. FISH 3/17/82	TITLE	MODEL 145-003 OPTION 5000 HOUR TIMER & SYMMETRY CONTROL
FINISH WAVETEK PROCESS —	RELEASE APPROV		
	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ±.010 ANGLES ±1° XX ±.030		
	DO NOT SCALE DWG	MODEL NO 145-003 145-S-1021	DWG NO 0102-00-0442 REV B
	SCALE NONE	CODE IDENT 23338	SHEET 1 OF 1

0102-00-0442 B

⚠5 UPON COMPLETION OF CALIBRATION AND QUALITY CONTROL ACCEPTANCE APPLY SIGNED CALIBRATION LABEL IN AREA INDICATED.

⚠2 REMOVE REAR PANEL 1400-00-6760 FROM FUNCTION GENERATOR 1000-00-0101 AND DRILL A .375 HOLE PER 1400-02-0603 AND SILKSCREEN REAR PANEL PER 1400-02-0600. REASSEMBLE REAR PANEL.

⚠1 MARK LABEL FOR OPTION 003.

NOTE: UNLESS OTHERWISE SPECIFIED

REV	ECN	BY	DATE	APP

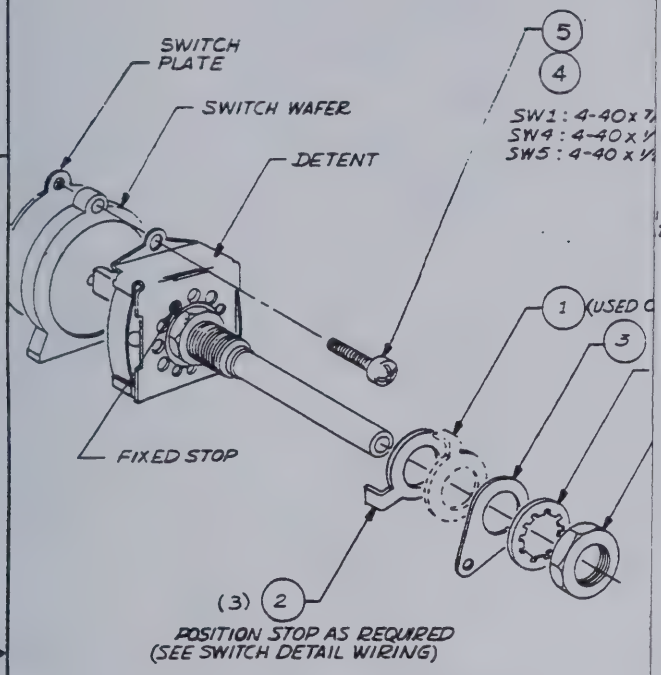
REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	SCHEMATIC, INSTRUMENT	0004-00-0101	WVTK	0004-00-0101	1
NONE	ASSY DRWG, MODEL 145 OPTION 3000 HOUR TIMER AND SYMMETRY CONTROL	0102-00-0442	WVTK	0102-00-0442	1
1	MODEL 145 20MHZ PULSE FUNCTIONGENERATOR	145	WVTK	1000-00-0101	1
NONE	ATP FOR MODEL 145 AND OPTIONS	1002-00-0101	WVTK	1002-00-0101	1
2	LABEL, OPTION, MODEL 23	1400-01-9890	WVTK	1400-01-9890	1
9	REAR PANEL	1400-02-0600		1400-02-0600	1
3	LABEL, WVTK CALIB	1400-02-1460	WVTK	1400-02-1460	1
C6 C7	CAP CER MON .01MF 50V, AXIAL	CAC02Z5U103Z100A	CORNG	1300-01-0310	2
J2	CONN HEADER, 3 PIN, .100 MTA	640436-3	AMP	2100-02-0116	1
P2	CONN HEADER, 3 PIN	640440-3	AMP	2100-02-0117	1
4	KNOB STD	RB-67-1-SB-M	RDGAN	2400-01-0008	1
5	INDICATOR, ELAPSED TIME (3000 HR)	T-000-4	FRED	2400-06-0006	1

WAVETEK PARTS LIST	TITLE MODEL 145 WITH SPECIAL OPTION S-1021	ASSEMBLY NO. 1000-00-0442 PAGE 1	REV C

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
6	HOLDER, TIMER	T-102	FRED	2400-06-0007	1
7	NUT, PANEL, 3/8X1/2X.09 2, Z	3/8 X 1/2 NUT	CHRCL	2800-16-0000	2
8	WASHER, INTERNAL TOOTH, 3/8 IN.	3/8ITLW	CHRCL	2800-28-0000	2
R30	CONTROL SHAFT, SWITCH-POT, CERMET, LINEAR 50K 10%, CCW DETENT	72LIND488503N	AB	4602-03-0304	1
R28	RES, MF, 1/8W, 1%, 2K	RN55D-2001F	TRW	4701-03-2001	1
R284	RES, MF, 1/8W, 1%, 2.15M	RN55D2154F	TRW	4701-03-2154	1
R26 R27	RES, MF, 1/8W, 1%, 4.99K	RN55D-4991F	TRW	4701-03-4991	2
IC3	OP AMP, INTERNALLY COMP, HIGH PERFORMANCE	LM741CN	NSC	7000-07-4100	1

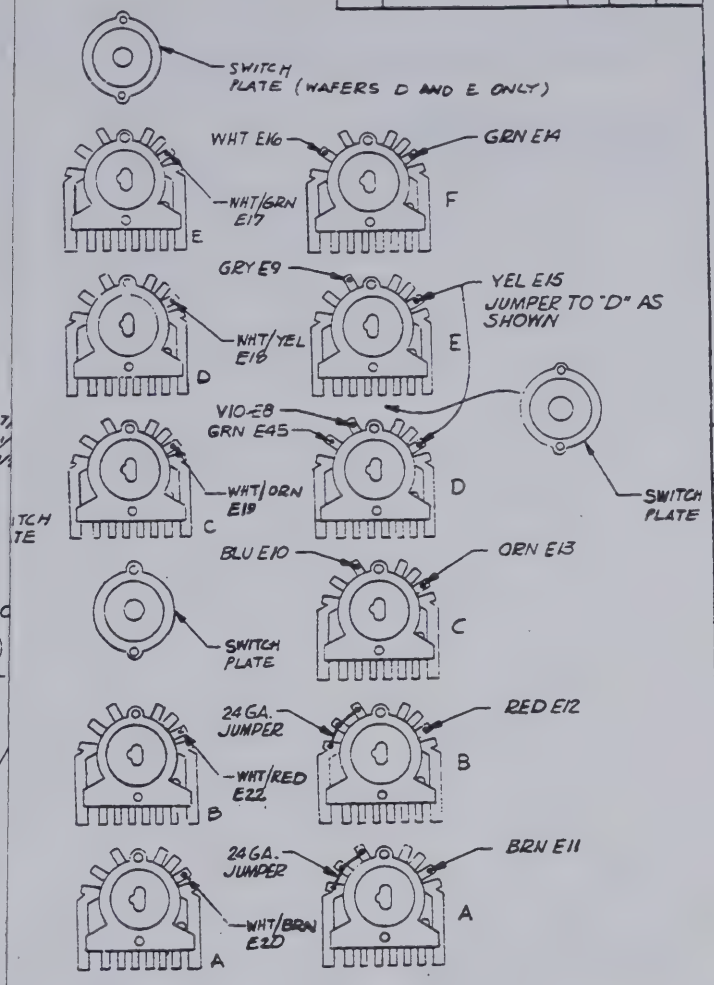
WAVETEK PARTS LIST	TITLE MODEL 145 WITH SPECIAL OPTION S-1021	ASSEMBLY NO. 1000-00-0442 PAGE 2	REV C

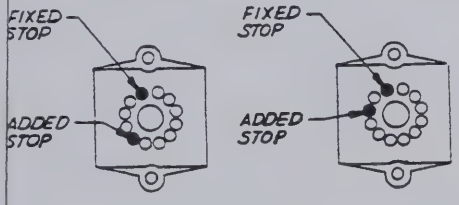
REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE	WAVETEK San Diego, California
MATERIAL	PROJ ENGR		TITLE PARTS LIST TIMER & SYMMETRY CONTROL
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ±.010 XX ±.030 ANGLES ±1		
	DO NOT SCALE DWG	MODEL NO 145-S-1021	DWG NO 1000-00-0442 REV C
	SCALE	CODE IDENT 23338	SHEET 1 OF 1



TYPICAL HARDWARE STACK-UP

REV	ECN	BY	DATE	APP





SW4 WIRING DETAIL

SW1 WIRING DETAIL

DETENT SHOWN FROM FRONT VIEW IN FULL COUNTER CLOCKWISE POSSITION

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN MELISSA SMITH	DATE 4/21/89	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL —	PROJ ENGR		TITLE: ASSEMBLY GENERATOR BOARD
	RELEASE APPROV		
FINISH WAVETEK PROCESS —	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030		
	DO NOT SCALE DWG		MODEL NO 145-S-620 DWG NO 1101-00-3245 REV A
	SCALE		CODE IDENT 23338 SHEET 2 OF 3

8 7 2 1

REV	ECN	BY	DATE	APP

REFERENCE DESIGNATORS	PART DESCRIPTION	DRIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
NONE	SCHEMATIC, INSTRUMENT	0004-00-0101	WVTK	0004-00-0101	1
NONE	ASSY DRWG, MODEL 145 OPTION 3000 HOUR TIMER AND SYMMETRY CONTROL	0102-00-0442	WVTK	0102-00-0442	1
1	MODEL 145 20MHZ PULSE FUNCTIONGENERATOR	145	WVTK	1000-00-0101	1
NONE	ATP FOR MODEL 145 AND OPTIONS	1002-00-0101	WVTK	1002-00-0101	1
2	LABEL, OPTION, MODEL 23	1400-01-9890	WVTK	1400-01-9890	1
9	REAR PANEL	1400-02-0600		1400-02-0600	1
3	LABEL, WVTK CALIB	1400-02-1460	WVTK	1400-02-1460	1
C6 C7	CAP CER MON .01MF 50V, AXIAL	CAC02Z5U103Z100A	CORNG	1300-01-0310	2
J2	CONN HEADER, 3 PIN, .100 MTA	640436-3	AMP	2100-02-0116	1
P2	CONN HEADER, 3 PIN	640440-3	AMP	2100-02-0117	1
4	KNOB STD	RS-67-1-SB-M	ROGAN	2400-01-0008	1
5	INDICATOR, ELAPSED TIME (3000 HR)	T-000-4	FRED	2400-06-0006	1

WAVETEK PARTS LIST	TITLE MODEL 145 WITH SPECIAL OPTION S-1021	ASSEMBLY NO. 1000-00-0442	REV C
		PAGE 1	

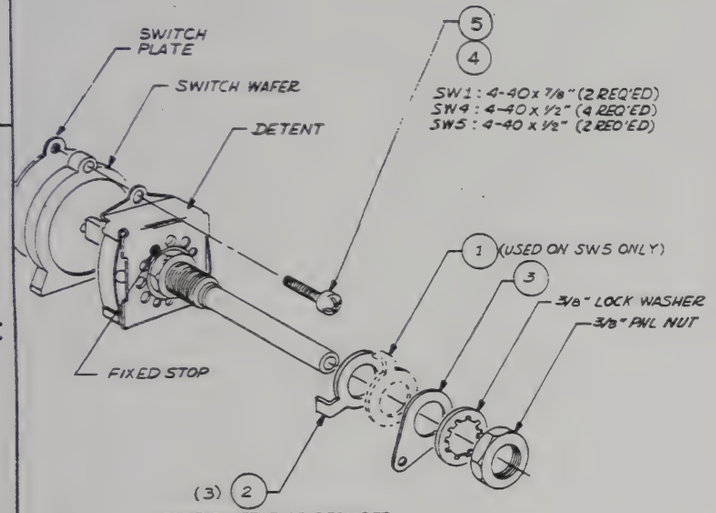
REFERENCE DESIGNATORS	PART DESCRIPTION	DRIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY/PT
6	HOLDER, TIMER	T-102	FRED	2400-06-0007	1
7	NUT, PANEL, 3/8X1/2X.09 2, Z	3/8 X 1/2 NUT	CMRCL	2800-16-0000	2
8	WASHER, INTERNAL TOOTH, 3/8 IN.	3/8ITLW	CMRCL	2800-28-0000	2
R30	CONTROL SHAFT, SWITCH-POT, CERMET, LINEAR 50K 10%, CCW DETENT	72LIND4B5503N	AB	4602-05-0304	1
R28	RES, MF, 1/8W, 1%, 2K	RN55D-2001F	TRW	4701-03-2001	1
R284	RES, MF, 1/8W, 1%, 2.15M	RN55D2154F	TRW	4701-03-2154	1
R26 R27	RES, MF, 1/8W, 1%, 4.99K	RN55D-4991F	TRW	4701-03-4991	2
IC3	OP AMP, INTERNALLY COMP, HIGH PERFORMANCE	LM741CN	NSC	7000-07-4100	1

WAVETEK PARTS LIST	TITLE MODEL 145 WITH SPECIAL OPTION S-1021	ASSEMBLY NO. 1000-00-0442	REV C
		PAGE 2	

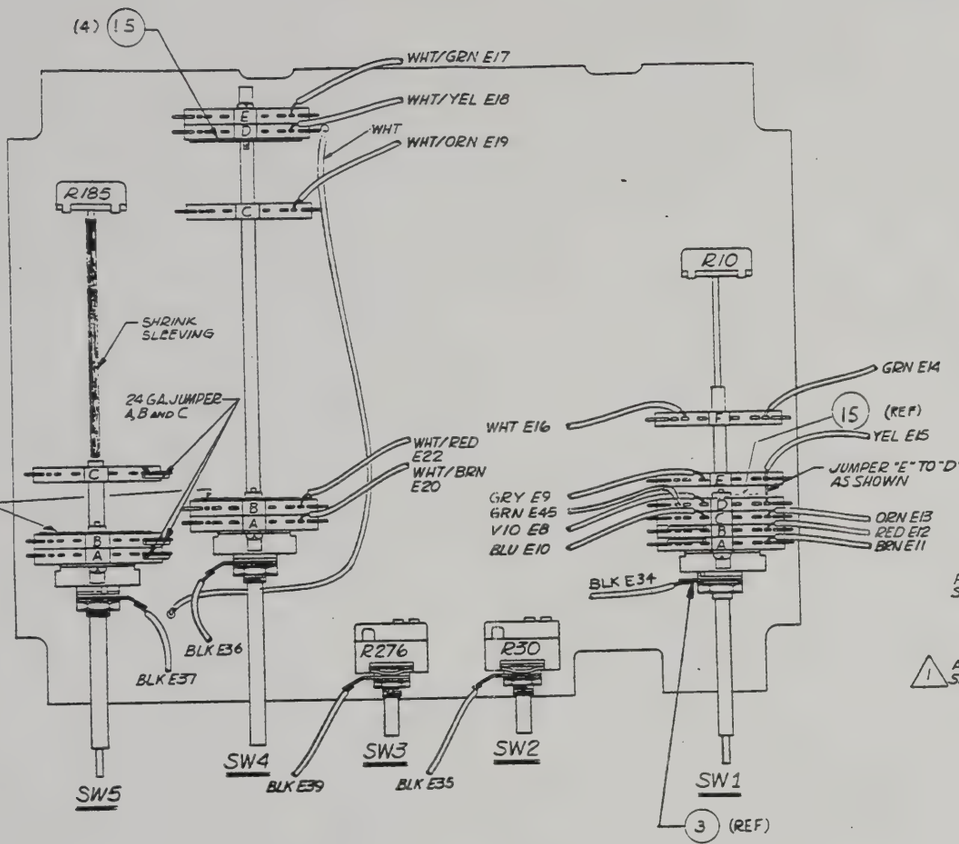
NOTE UNLESS OTHERWISE SPECIFIED

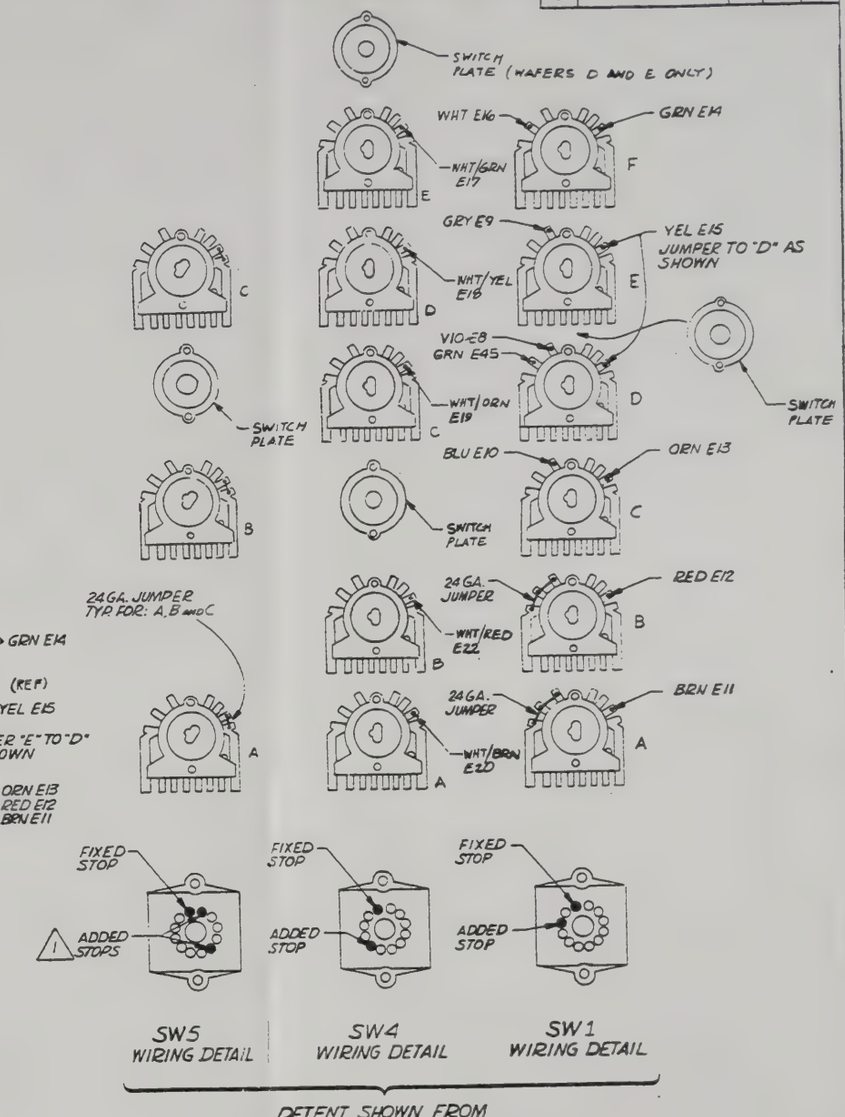
REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN	DATE	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	PROJ ENGR		TITLE PARTS LIST TIMER & SYMMETRY CONTROL
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 XX ± .030 ANGLES ± 1		
	DO NOT SCALE DWG	MODEL NO 145-S-1021	DWG NO 1000-00-0442 REV C
	SCALE	CODE IDENT 23338	SHEET 1 OF 1

REV	ECN	BY	DATE	APP



TYPICAL HARDWARE STACK-UP

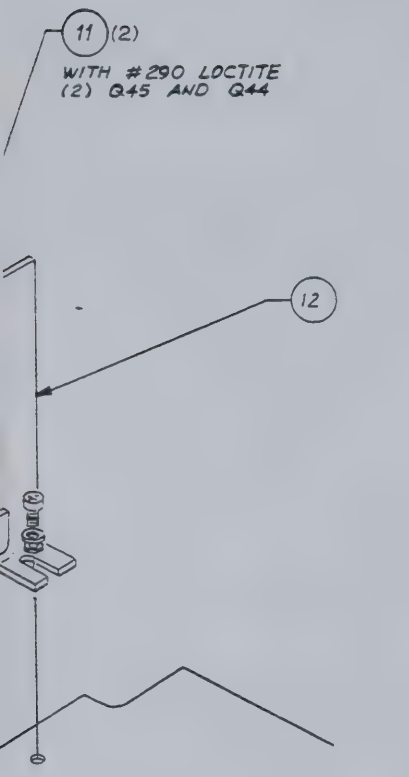




NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN MELISSA SMITH	DATE 4/21/89	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL —	PROJ ENGR		TITLE: ASSEMBLY GENERATOR BOARD
FINISH WAVETEK PROCESS —	RELEASE APPROV		
	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030		
	DO NOT SCALE DWG	MODEL NO 145-S-620	DWG NO 1101-00-3295 REV A
	SCALE	CODE IDENT 23338	SHEET 2 OF 3

REV	ECN	BY	DATE	APP



REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN SMITH	WAVETEK SAN DIEGO, CALIFORNIA	
MATERIAL	PROJENGR	TITLE ASSEMBLY GENERATOR BOARD	
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1° XX ± .030		
	DO NOT SCALE DWG	MODEL NO 145-S-620	DWG NO 101-00-3245 REV A
	SCALE	CODE IDENT 23338	SHEET 3 OF 3

D C B A

4 3 2 1

REV	ECN	BY	DATE	APP

INTEGRATOR/ TRIANGLE AMPLIFIER

TP2
R64 10Ω
+15V
C65 5.6 35V
C66 .01
R62 1.5K
R63 1.5K
C29 .01
CR4 IN823A
CR5 IN823A
C27 .01
C30 .01
R125 825
Q8 2N5485
R66 150
R65 33.2
C28 220Pf SM
Q12 2N3565
TRI-FUNCTION (4B8, 3B1)
TP4
C26 100Pf SM
R67 316
C25 15Pf S.M.
R68 33.2
Q10 2N3905
R131 301K
C67 .1
C31 220Pf SM
R141 10
R61 10
R69 33.2
R70 750
Q23 2N3905
Q9 2N5485
R71 316
R72 33.2
Q11 2N3905
C68 .01
CR3 IN823A
C32 .01
R73 100
-15V
TP5
GND
GND

+15V
R284 2.15m
J2
1
-15V
2
N/C
3
1000-00-0221
OPTION 001
(5000 HOUR TIMER)

I+ (IC2)
TRIG OUT (3D1)
PI-1 SYNC

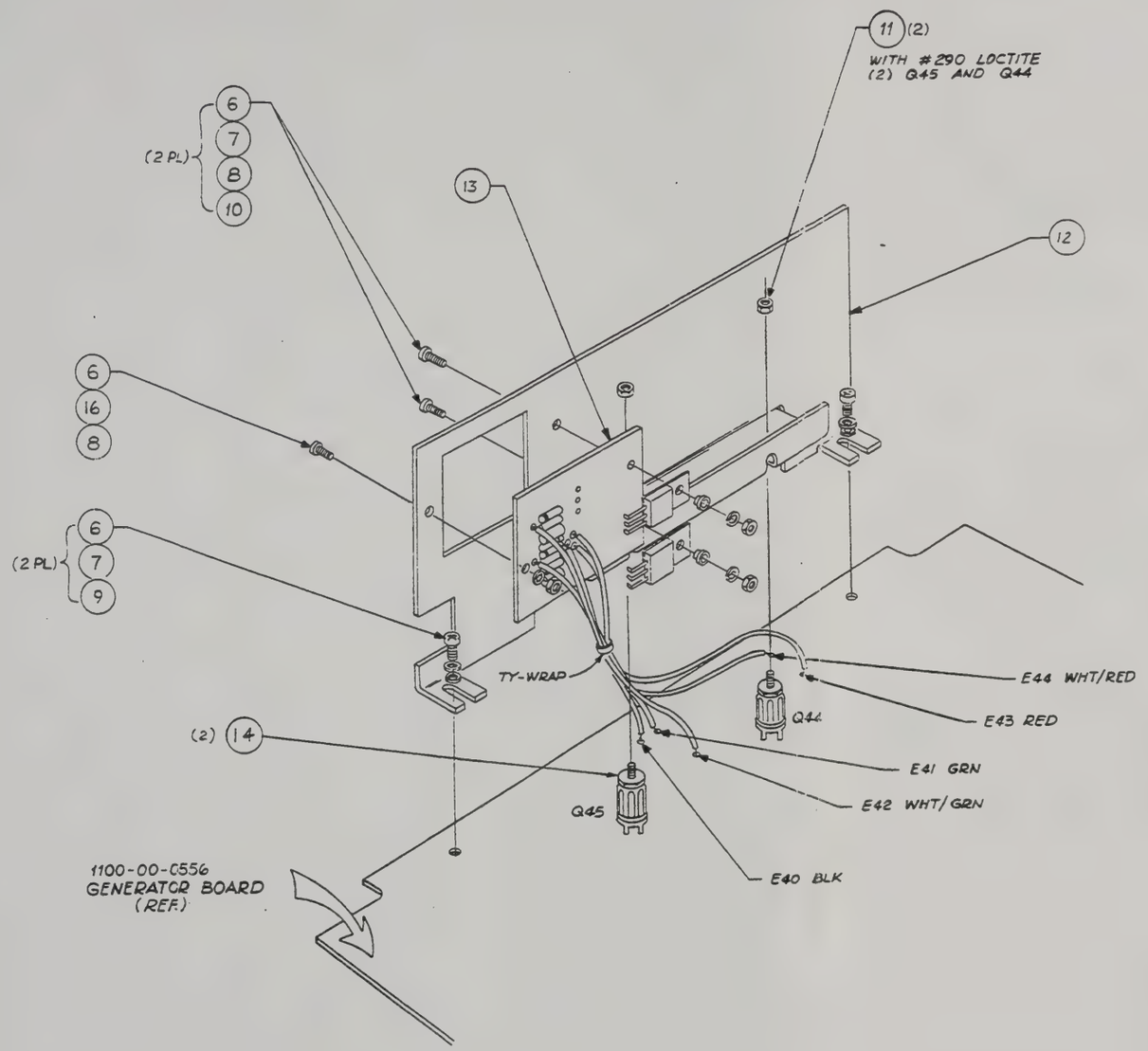
SW1-F
X10M
X1M
X100K
X10K
X1K
X100
X10
X1
CW
X.1
X.01
E14
E16
C34 3.5/13
C36 820Pf
C37, .01
C38, .1
SQUARE FUNCTION (3B5)

CAP. MULTIPLIER OUT (1A3)
I- (IC2)
TRIG. SYNC (3C7)

NOTE: UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN MELISSA SMITH	DATE 4/21/69	WAVETEK SAN DIEGO • CALIFORNIA
MATERIAL	PROJ MGR		TITLE: SCHEMATIC GENERATOR BOARD
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ± .010 ANGLES ±1° XX ± .030		
	DO NOT SCALE DWG	MODEL NO 145-S-620	DWG NO 1104-00-3245 REV A
	SCALE	CODE IDENT 23338	SHEET 2 OF 4

REV	ECN	BY	DATE	APP



NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN BY SMITH	DATE	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	PROJENG		TITLE: ASSEMBLY GENERATOR BOARD
FINISH WAVETEK PROCESS	REF FOR APPROV		
	TOLERANCE UNLESS OTHERWISE SPECIFIED XXX ± .010 ANGLES ± 1 XX ± .030		
	DO NOT SCALE DWG	MODEL NO 145-S-620	DWG NO 101-00-3245 REV A
	SCALE	CUSH 101 23338	SHEET 3 OF 3

REV	ECN	BY	DATE	APP

INTEGRATOR/ TRIANGLE AMPLIFIER

TP2 · R64 10Ω · +15V · R95 35.2 · R93 500 · R94 1K · R96 1.21K · R97 1.21K · R98 1K · R99 1K

R62 1.5K · R63 1.5K · C29 .01 · CR4 IN823A · CR5 IN823A · C27 .01 · C30 .01 · R66 150 · Q8 2N5485 · R65 33.2 · C28 220Pf S.M. · Q12 2N3563 · C26 100Pf S.M. · R67 316 · C25 15Pf S.M. · R68 33.2 · Q10 2N3905 · C31 220Pf S.M. · R61 10 · R69 33.2 · R70 750 · Q9 2N5485 · R71 316 · R72 33.2 · Q11 2N3905 · CR3 IN823A · C32 .01 · R73 100 · R74 10 · -15V · C33 .01 · GND

C45 TRIM · R85 54.9 NOM. · C46 47Pf S.M. · R86 604 · C47 68Pf S.M. · R88 316 · R89 316 · R91 604 · C50 68Pf S.M. · R92 54.9 NOM. · C51 47Pf S.M. · C52 TRIM · C53 .01 · R100 ** · R105 ** · R107 500 · C54 .01

CR12 HP2811 · CR13 HP2811

Q15 2N3640 · Q16 2N3640 · R102 249 · CR14 · CR15 · R101 33.2 · R103 33.2 · C48 TRIM · R104 1K · Q17 2N3905

IC9 CA3049 (pins 12, 11, 10, 4, 5, 6, 1, 7, 2, 8, 9) · R114 150 · R115 392 · C57 .01 · C55 ** · R106 464 · R108 1K · R109 33.2 · R110 33.2 · R111 1K · C49 ** · R113 1.5K · C56 .01 · R112 10K · C58 .01 · R116 10 · R107 500 · C54 .01 · -15V · GND

TRIANGLE BUFFER

+15V · C65 5.6 35V · R117 4.99K · R118 100 · C60 .01 · R120 200 · R123 10 · C66 .01 · R119 33.2 · R122 909 · Q19 2N3905 · R125 825 · R124 100 · Q22 2N3903 · TP3 · TRI-FUNCTION (488,381) · C63 .01 · R126 33.2 · Q18 2N3563 · Q20 2N3563 · R130 33.2 · TP4 · R131 301K · C67 .1 · R127 100 · C61 5Pf · R128 100 · R129 100 · R140 33.2 · R141 10 · CR16 IN4581 · R136 7.5K · R137 249 · Q23 2N3905 · C59 10Pf · R132 15K · R134 316 · R138 7.5K · Q21 2N3903 · R133 7.5K · C62 .01 · R135 750 · R139 10 · C64 5.6 35V · C68 .01 · -15V · GND · TP5

+15V · R284 2.15m · J2 · -15V → 2 · N/C → 3 · 1000-00-0221 OPTION 001 (5000 HOUR TIMER)

C49 22/25V · +5V · R144 249 · CR17 · R142 100 · Q24 2N3905 · -15V · P1-1 SYNC · SYNC AMPLIFIER · R143 215 · SQUARE FUNCTION(3B5)

R81 10 · +15V · R78 7.5K · R80 3.65K · R79 33.2 · Q13 2N3903 · R75 33.2 · CR8 FDT77 · CR6 FDT77 · CR7 FDT77 · CR9 FDT77 · CR10 · C44 .01 · CR11 · R82 33.2 · Q14 2N3905 · R83 3.65K · R84 10 · -15V · R76 33.2 · R77 7.5K · C43 .01

I+ (IC2) · TRIG OUT(3D1) · CAP MULTIPLIER OUT(1A3) · I- (IC2) · TRIG. SYNC(3C7)

SW1-F · X10M · X1M · X100K · X10K · X1K · X100 · X10 · X1 · X.1 · X.01 · CW · E16 · E14 · C34 3.5/13Pf · C35 ** · C36 820R/13 S.M. · C37 .01 · C38 .1 · C39 1

FB · C40 3.5/13Pf · C41 ** · C42 .01 · GND

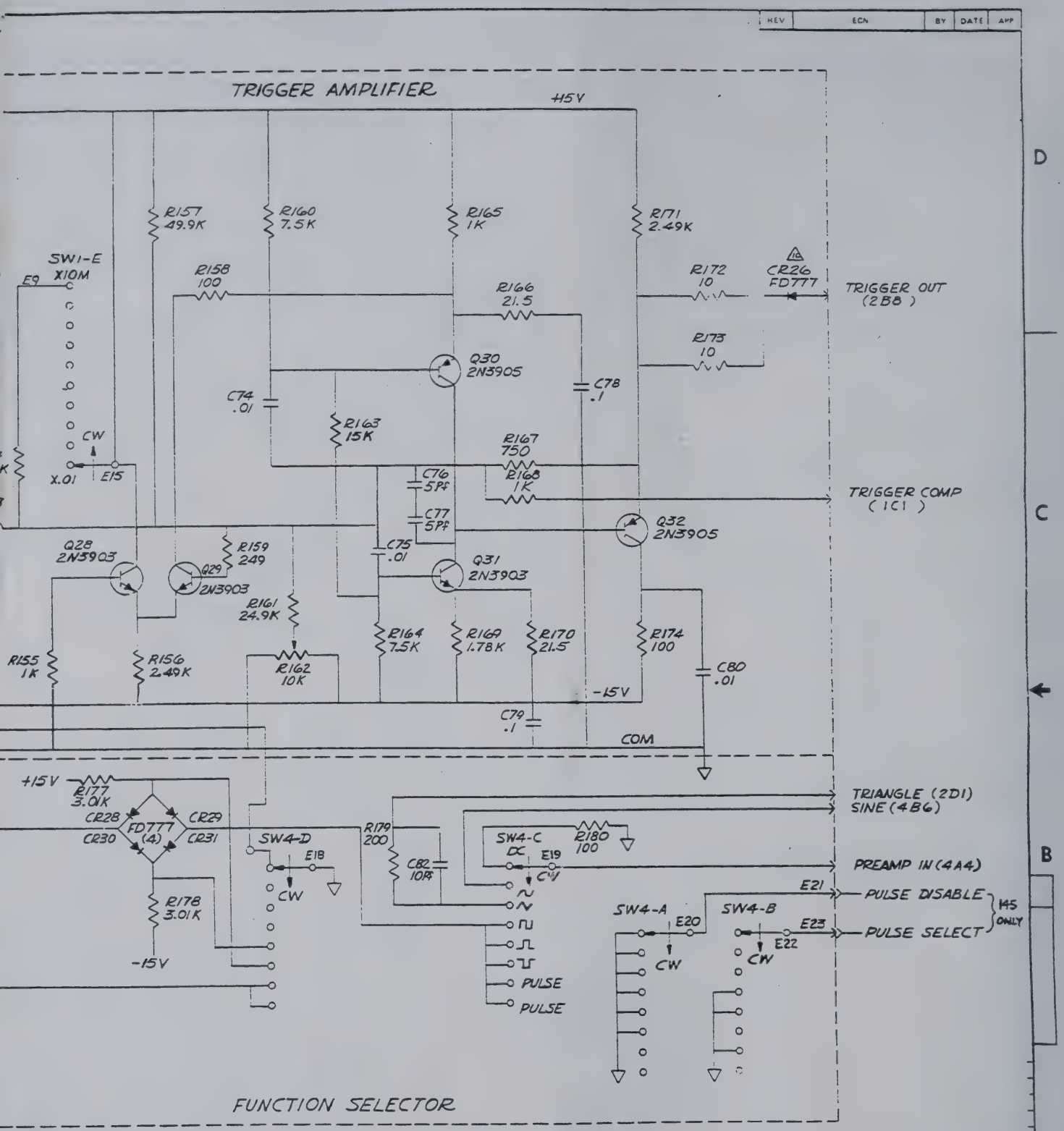
NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES · MATERIAL · FINISH WAVETEK PROCESS · DRAWN MELISSA SMITH · DATE 4/21/89 · PROJ MGR · RELEASE APPROV · TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ± .010 ANGLES ±1° .XX ± .030 · DO NOT SCALE DWG · SCALE

WAVETEK SAN DIEGO, CALIFORNIA

TITLE: SCHEMATIC GENERATOR BOARD

MODEL NO 145-S-620 · DWG NO 1104-00-3245 · REV A · CODE IDENT 23338 · SHEET 2 OF 4


REV
ECN
BY
DATE
APP
TRIGGER AMPLIFIER
+15V
R157 49.9K
R160 7.5K
R165 1K
R171 2.49K
SW1-E X10M
E9
R158 100
R166 21.5
R172 10
CR26 FD777
TRIGGER OUT (2B8)
R173 10
Q30 2N3905
C78 .1
C74 .01
R163 15K
CW
X.01
E15
R167 750
R168 1K
C76 5Pf
C77 5Pf
TRIGGER COMP (1C1)
Q32 2N3905
Q28 2N3903
Q29 2N3903
R159 249
C75 .01
Q31 2N3903
R161 24.9K
R164 7.5K
R169 1.78K
R170 21.5
R174 100
C80 .01
R155 1K
R156 2.49K
R162 10K
-15V
C79 .1
COM
+15V
R177 3.01K
CR28
CR29
CR30
CR31
FD777 (4)
SW4-D
E18
CW
R178 3.01K
-15V
R179 200
C82 10Pf
SW4-C
E19
R180 100
TRIANGLE (2D1)
SINE (4B6)
PREAMP IN (4A4)
E21
PULSE DISABLE
SW4-A
E20
SW4-B
E23
E22
PULSE SELECT
145 ONLY
PULSE
PULSE
FUNCTION SELECTOR
REMOVE ALL BURRS AND BREAK SHARP EDGES
MATERIAL
FINISH WAVETEK PROCESS
TOLERANCE UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DWG
WAVETEK SAN DIEGO • CALIFORNIA
TITLE
SCHEMATIC GENERATOR BOARD
145-S-620
1104-00-3245
A
23338
SHEET 3 OF 4
D
C
B
A
4
3
2
1

REV	ECN	BY	DATE	APP

OUTPUT ATTENUATOR

+24V
C85 .1
+15V
R181 100K
R182 150K
-15V
J9 EXT DC OFFSET
E26
C83 .01
R183 2K
OFST
C84 .01
R184 1.96K
E27
GND
R188 2.49K
R189 2.49K
CR32
R190 750
Q33 2N3905
Q34 2N3905
FUNCTION OUT
E28
SW5-A
SW5-B
E29
R185 500 VARIABLE
CW
R186 249
R187 T 27.4
R235 562
0
CW
-20
-40
-60
E38
C87 100 PF
E34
E35
E36
E37
E39
DETENT GNDS.
Q35 AD812
R234 61.9
R198 1.5K
R199 4.02K
-24V
C86 .1
GND
GND

SINE CONVERTER

C109 .1
C111 5.6
R270 681
R271 90.9
R236 10 NOM
TRIANGLE FUNCTION (2D1)
CR38
CR39
C112 5.6

DC OFFSET

-15V
CW
OFF
R276 10K
SW3
OFST
+15V
C110 .01

LAST REF. DES. USED

Q51
R283
C112
CR46
E34
TP5
SW-5

NOT USED:
C100
C15, C23,
R87, R90, R180, R223

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN MELISSA SMITH	DATE 4/21/86	WAVETEK SAN DIEGO • CALIFORNIA
MATERIAL	PROENGR		TITLE: SCHEMATIC GENERATOR BOARD
	RELEASE APPROV		
FINISH WAVETEK PROCESS	TOLERANCE UNLESS OTHERWISE SPECIFIED .XXX ±.010 ANGLES ±1° XX ±.030		
	DO NOT SCALE DWG	MODEL NO 145-S-620	DWG NO 1104-00-3295 REV A
	SCALE	CODE IDENT 23338	SHEET 4 OF 4

REV	ECN	BY	DATE	APP

TRIGGER AMPLIFIER

+15V
P1-5
START/STOP
-15V
R30 10K
CW
SW-2
+15V
145 ONLY
START/STOP
R148 576 NOM.
R151 2.49K
C72 .01
R147 2.49K
R278 2.49K
SW1-E
E9
X10M
X.01
E15
CW
R154 76.8K
R153 100
CR19 FD777
CR23
CR25
P1-4 TRIG LOGIC
R149 100
Q27 2N3903
CR20
CR21
CR22
CR24
TRIG SYNC (2A8)
C71, .01
CR18
R145 100
Q26 2N3905
R146 10K
R150 3.01K
R152 4.99K
-15V
C73 .01
GND
R157 49.9K
R158 100
R160 7.5K
R165 1K
R171 2.49K
R172 10
CR26 FD777
TRIGGER OUT (2B8)
R166 21.5
R173 10
Q30 2N3905
C74 .01
C78 .1
R163 15K
R167 750
R168 1K
C76 5Pf
C77 5Pf
TRIGGER COMP (IC1)
Q32 2N3905
C75 .01
Q31 2N3903
Q28 2N3903
Q29 2N3903
R159 249
R161 24.9K
R162 10K
R155 1K
R156 2.49K
R164 7.5K
R169 1.78K
R170 21.5
R174 100
C80 .01
C79 .1
COM

PULSE AMPLIFIER (145 ONLY)

+15V
C81 .01
FUNCTION SQUARE (2A2)
PULSE
E24
GND
E25
Q25 2N3903
R175 49.9 1/4 W
CR27
R176 1.5K
-15V
GND

FUNCTION SELECTOR

SW4-E
E17
CW
+15V
R177 3.01K
CR28
CR29
CR30
CR31
FD777 (4)
R178 3.01K
-15V
SW4-D
E18
CW
R179 200
C82 10Pf
SW4-C
DC
E19
CW
R180 100
TRIANGLE (2D1)
SINE (4B6)
PREAMP IN (4A4)
PULSE
PULSE
SW4-A
E20
CW
SW4-B
E23
E22
CW
E21
PULSE DISABLE
PULSE SELECT
145 ONLY

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES
MATERIAL
FINISH WAVETEK PROCESS
DRAWN
PROJECT
APPROV
TOLERANCE UNLESS OTHERWISE SPECIFIED
XXX ± .010 ANGLES ± 1°
XX ± .030
DO NOT SCALE DWG
SCALE

WAVETEK SAN DIEGO, CALIFORNIA

TITLE
SCHEMATIC
GENERATOR BOARD

MODEL NO 145-S-620
DWG NO 1104-00-3245
REV A
CAGE 23338
SHEET 3 OF 4

REV	ECN	BY	DATE	APP

OUTPUT AMPLIFIER

+24V
C85 .1
C88 .1
R188 2.49K
R189 2.49K
R191 3.65K
R192 33.2
R193 392
R194 392
R195 392
R281 24.9K
+15V
R181 100K
R182 150K
-15V
J9 EXT DC OFFSET
E26
E27
C83 .01
C84 .01
R183 2K
R184 1.96K
OFST
GND
CR32
CR33 IN823A
Q33 2N3905
Q34 2N3905
Q36 2N3563
Q38 2N5160
(HEAT SINK)
R190 750
C89 .01
R196 10
R197 100 NOM.
C94 .1
CR34
CR35
Q40 2N3903
R211 1.1K
Q42 2N2219A
Q44 (HEAT SINK) 2N3866
R215 61.9
R216 100
R218 15
R220 15
C95 27µF 35V
C96 1µF
R224 49.9 ½W
R225 49.9 ½W
R226 49.9 ½W
R227 49.9 ½W
R185 500 VARIABLE
CW
R186 249
R187 T 27.4
R209 2K
CR36
CR37
C90 .01
C87 100 PF
R200 1K
Q35 AD812
R198 1.5K
R199 4.02K
R201 46.4K
R203 10K
C92 .01
Q37 2N3640
Q39 2N3866
(HEAT SINK)
R204 33.2
R205 464
R206 464
R207 464
R208 100 NOM.
R202 3.65K
R213 24.9K
R210 10
Q41 2N3905
R212 1.1K
R214 100
R217 61.9
Q43 2N2905A
R219 15
R221 15
Q45 2N5160 (HEAT SINK)
C97, 1µF
E42
C98 27µF/35V
R287 4.7
R286 100
CR49 IN758A
CR50 IN758A
E41
E40
U12 A LM357T
CUR. LMTR. P.C.
-24V
C86 .1
C91 .1
C93 .1
GND

U13 LM317T
E43
R285 4.7
R284 100
CUR. LMTR. P.C.
CR47 IN758A
CR48 IN758A
E44

OUTPUT ATTENUATOR

SW5-C
SW5-A
SW5-B
R230 249
R235 56.2
R231 499
R228 909
R232 4.99K
R229 124 1/4W
R233 121 1/4W
R234 61.9
0
-20
-40
-60
CW
FUNCTION OUT
E28
E29
E38
E34
E35
E36
E37
E39
DETENT GNDS.
GND

SINE CONVERTER

C111 5.6
R237 23.7K
R238 8.25K
R239 11K
R240 11K
R241 150
R242 249
R243 576
C99 220 PF S.M. NOM.
SINE FUNCTION (3B1)
R244 61.9
TRIANGLE FUNCTION (2D1)
R236 10 NOM.
CR38
CR40
CR42
CR44
CR39
CR41
CR43
CR45
FD777 SET OF 8
R245 249
R246 576
R247 150
R248 23.7K
R249 8.25K
R250 11K
R251 11K
C112 5.6
-15V
GND

PRE-AMPLIFIER

+15V
R253 33.2
R254 2.49K
R255 2.49K
C101 .01
CR46
Q46 2N3905
R261 7.5K
R262 249
R267 1.5K
Q49 2N3640
R268 61.9
C107
C109 .1
C103 .01
R269 33.2
C108 5PF (NOM.)
Q47 2N3905
R263 13K NOM.
R264 681
R270 681
R271 909
R252 100 K
R256 301K
C102 100PF
R265 10K
R272 33.2
R273 10
Q51 2N3905
Q48 AD812
R259 499
C104 .01
Q50 2N3563
R257 1K
R258 3.65K
R260 61.9
R266 7.5K
R274 2.49K
R275 619
C106 .1
-15V
C105 .1
GND
PREAMP IN (3B1)

DC OFFSET

-15V
CW
OFF
R276 10K
SW3
OFST
+15V
C110 .01

LAST REF. DES. USED

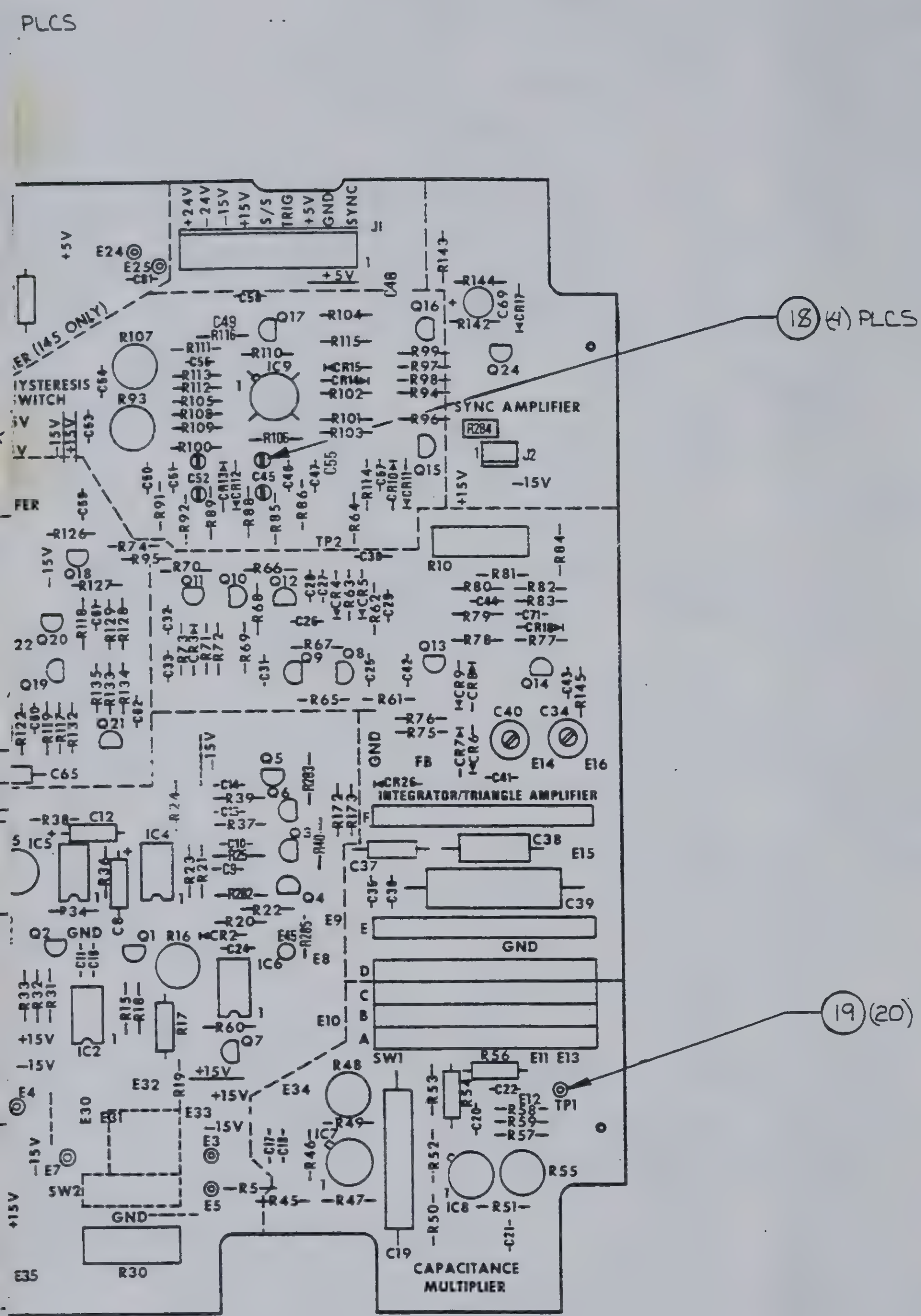
Q51
R283
C112
CR46
E34
TP5
SW-5

NOT USED:
C100
C15, C23, R87, R90, R180, R223

NOTE UNLESS OTHERWISE SPECIFIED

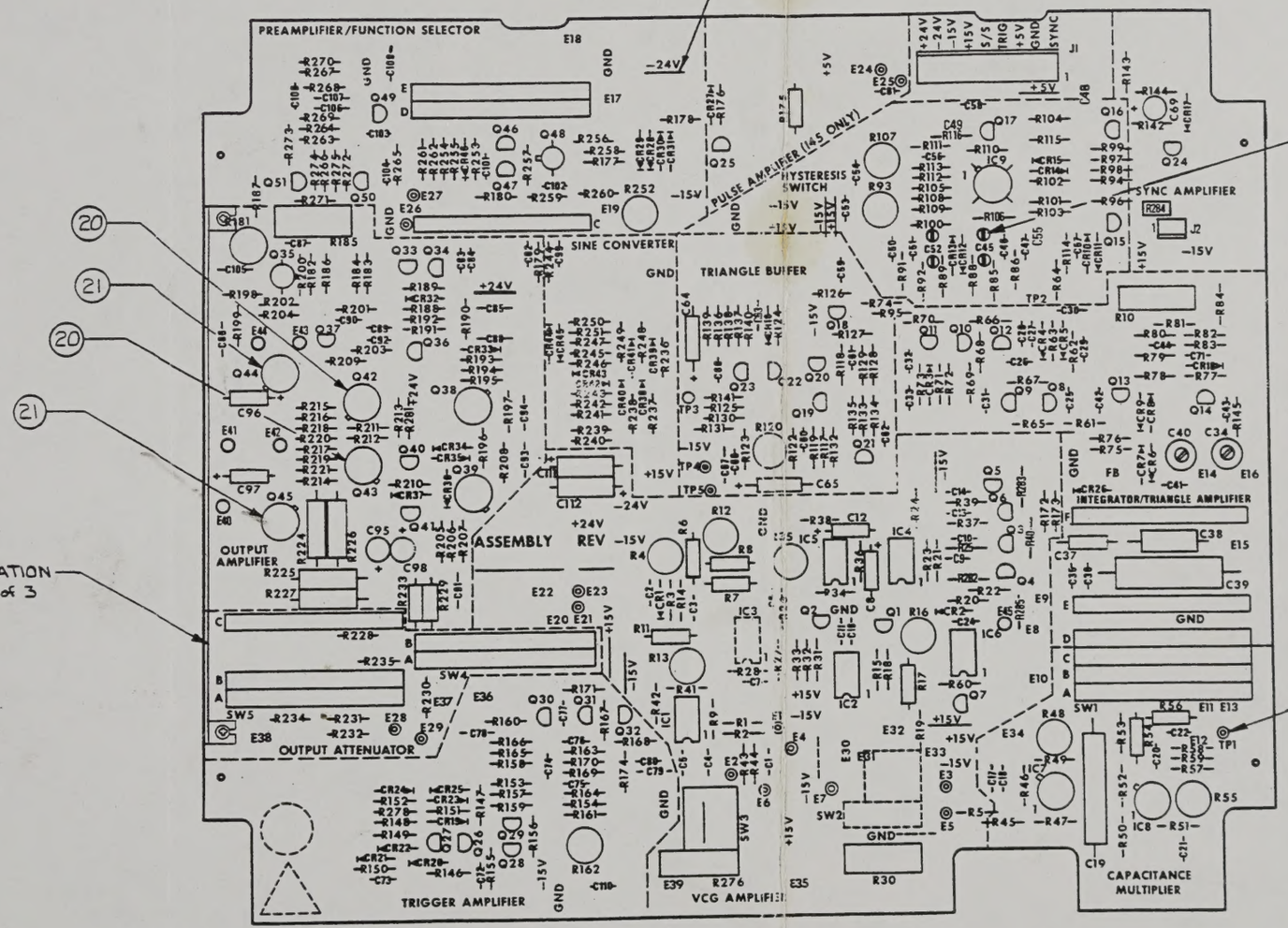
REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN MELISSA SMITH	DATE 11/13/87	WAVETEK San Diego, California
MATERIAL	ENGINEER		TITLE: SCHEMATIC GENERATOR BOARD
FINISH WAVETEK PROCESS	RELEASE APPROV		
	TOLERANCE UNLESS OTHERWISE SPECIFIED: .XXX ± .010 ANGLES ± 1° XX ± .030		
	DO NOT SCALE DWG		MODEL NO 145-S-620 · DWG NO 1104-00-3295 · REV A
	SCALE		CODE IDENT 23338 · SHEET 4 OF 4

REV	ECO	BY	DATE	APP
A	ECO # 89-262	MS	11/24/89	DMB



REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN MELISSA SMITH	DATE 11/24/86	WAVETEK
MATERIAL	CHECKED D. Buzzell	6/23/89	TITLE ASSEMBLY GENERATOR BOARD
	PROJ ENGR DZ Fisk	6/23/89	
FINISH WAVETEK PROCESS	RELEASE APPROV DZ Fisk	6/23/89	
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES .XX - .XXX -		SIZE D · FSCM NO 23338 · DWG NO. 1101-00-3245 · REV A
DO NOT SCALE DRAWING			SCALE · MODEL 145-S-620 · SHEET 1 OF 3

REV	ECO	BY	DATE	APP
A	ECO # 89-262	MS	7/26/89	DMB



FOR INSTALLATION SEE SHT 3 of 3 (REF: #12)

⚠1 TURN TO FULL COUNTER CLOCKWISE POSITION THEN TURN BACK CLOCKWISE ONE POSITION TO INSTALL BOTH STOPS.

NOTE UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND BREAK SHARP EDGES	DRAWN MELISSA SMITH	DATE 11/24/88	WAVETEK SAN DIEGO, CALIFORNIA
MATERIAL	CHECKED D. BUELL II	12/5/89	TITLE: ASSEMBLY GENERATOR BOARD
	PROJ ENGR	6/23/89	
FINISH WAVETEK PROCESS	RELEASE APPROV	6/23/89	
DO NOT SCALE DRAWING	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES .XX ±.02 .XXX ±.010		SIZE D; FSCM NO. 23338; DWG. NO. 1101-00-3245; REV A; SCALE; MODEL 145-S-620; SHEET 1 OF 3